



Juniper switching boss talks SDNs and more. PAGE 16 ►

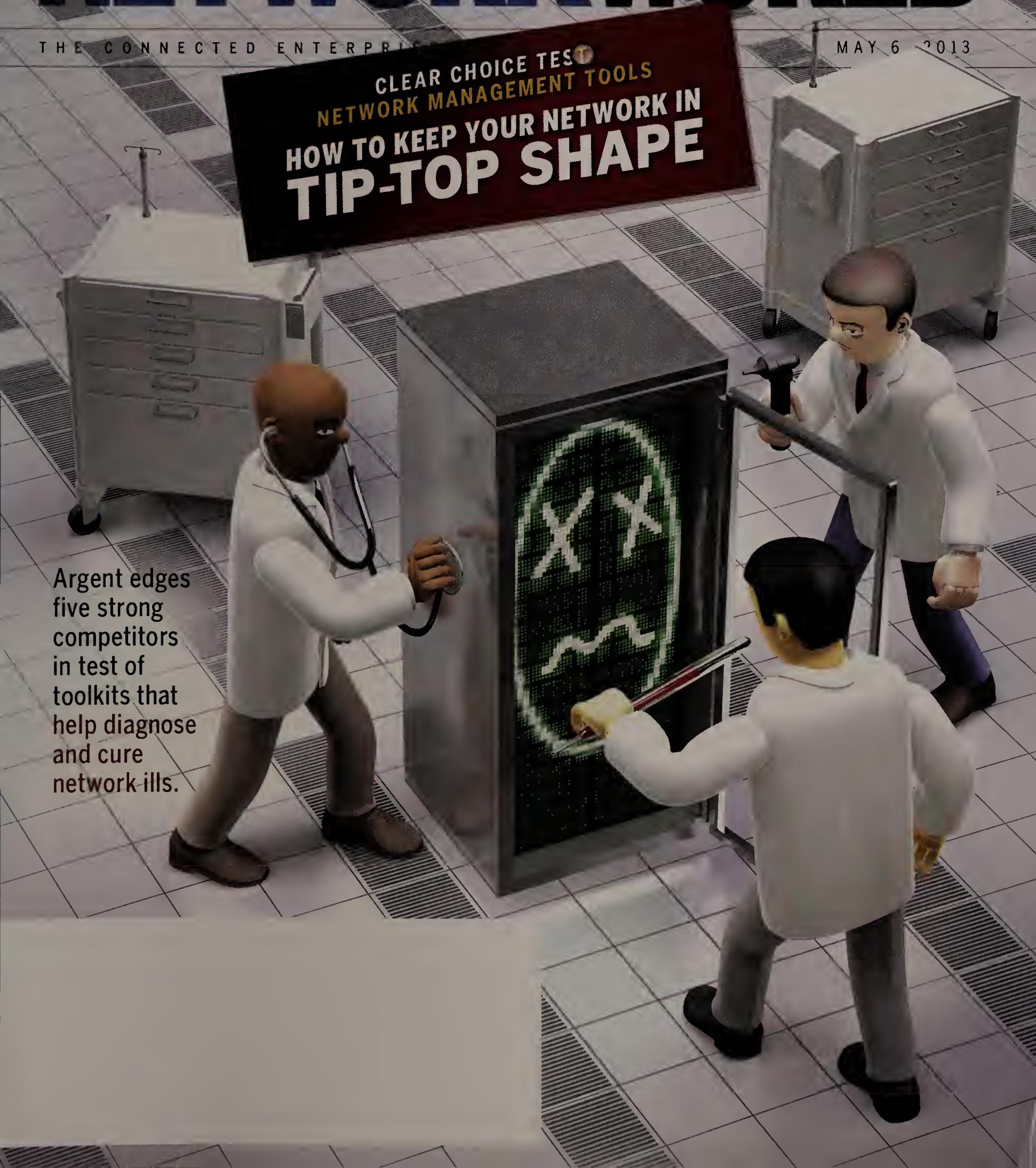
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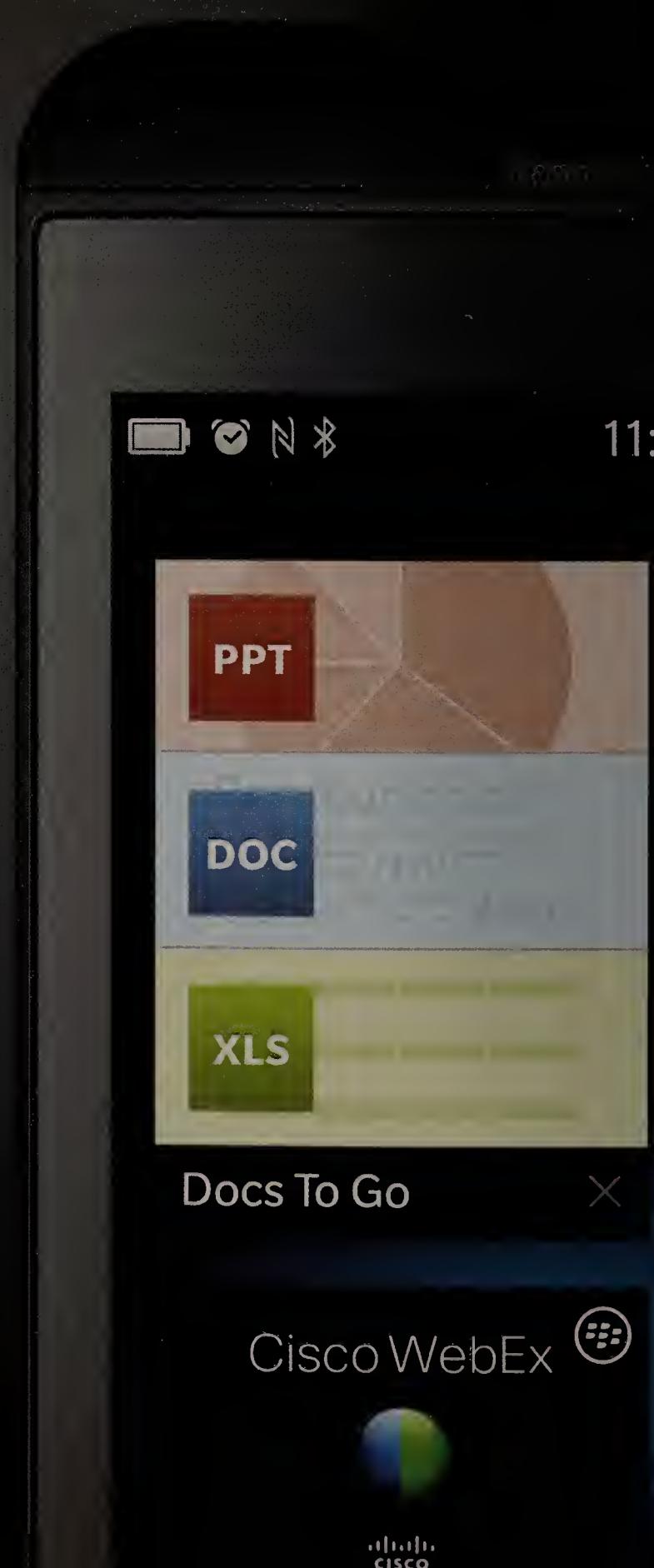
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 CISCO

MAY 6, 2013

FROM THE EDITOR | JOHN DIX

Time is now for Internet retail tax

On the face of it, the bill the Senate is considering to levy taxes on Internet retailers simply makes sense. The states are strapped for cash and we have a bifurcated system that requires local brick and mortar outlets to ante up while letting out-of-state online retailers off scot-free.

The Marketplace Fairness Act of 2013 (S.743, see tinyurl.com/c4r2v6d) would level the playing field by making it possible for states to require larger online retailers to pay taxes on goods delivered within their borders, even if the retailer has no physical presence in the state.

That makes states salivate because the National Council of State Legislatures estimates they are missing out on some \$23 billion per year in potential tax dollars. (Total e-commerce sales for 2012 were \$225 billion, 5% of total retail sales, according to the U.S. Department of Commerce. See tinyurl.com/3tucdw3.)

The devil, of course, is in the details.

For example, there are nearly 10,000 tax jurisdictions in the U.S. "How can we possibly know the tax rates in [those] jurisdictions?" *The Washington Times* quoted Overstock.com CEO Patrick Byrne saying. "In one jurisdiction, cotton candy is food; in another, it's entertainment or candy."

The bill seeks to address that problem by requiring states that want to pursue these taxes to streamline their requirements and provide "software free of charge for remote sellers that calculates sales and use taxes due on each transaction." But even then online retailers face the daunting task of filing returns in up to 46 states (the number that collect retail taxes), and heaven help those that get audited.

Recognizing that the change would pressure smaller online operations, the bill exempts shops with less than \$1 million in sales. That covers 99% of Internet sellers, Rachelle Bernstein, a vice president at the National Retail Federation, said in a PBS interview. Her organization favors the bill.

eBay opposes the bill, but at the very least would like to see the exemption limit set at \$10 million to ensure the taxes don't curtail small business growth. Brian Bieron, eBay's senior director of global public policy, says in that same PBS interview that \$10 million is the level recommended by the Department of Treasury Office of Tax Analysis.

A compromise on this exemption would be a good way to get this going. Starting with a smaller set of larger retailers would limit the exposure and give us time to work out the kinks.

But what it comes down to is this: If not now, when? It isn't like the growth in online retail sales is going to slow anytime soon. It isn't going to be easy, but it is time to level the retail playing field.

The longer we wait, the more likely our town centers become retail ghost towns.



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John A. Dix

peersay

BlackBerry CEO's take on tablets

→ THE POINT HEINS is making is that he believes, as I do, that the complications of having numerous devices with overlapping functions are going to be solved by the tech market very soon. This is particularly the case in the field of media consumption, which is a large part of tablet use. We are essentially buying a screen, be it a TV, a tablet or a smartphone. But what is the purpose of have having a screen with an entire computer attached to it when the tiny device in your pocket can power any screen? (Re: "What BlackBerry CEO Heins actually said about tablets"; tinyurl.com/d7nmsq8)

That is what he is proposing the future will look like; Your smartphone is your computer, everything else is just screens. We can't say whether he is a genius or an idiot yet. My view is that he is correct, albeit a big aggressive in his timetable.

Frederick N. Gofredson Herrer

Reality check on Twitter privacy

→ DON'T GET TOO excited: the only reason Twitter appears to be such a staunch privacy defender is its business model relies on the ability of users to assume almost any identity they want. This is as opposed to Facebook, ISPs, etc. whose model relies on real identities. Twitter isn't doing this because it's the right thing, it's doing it because it has to (Re: "EFF: Trust Twitter — but not Apple or Verizon — to protect your privacy"; tinyurl.com/c67ku8c). Jdrch

Why WWDC can't get any bigger

→ FOR MANY OF us, the big draw of WWDC is the ability to sit down and work on problems with Apple engineers. That will not scale, as there is and always will be a limited number of engineers available, and they need to work the rest of the year (Re: "Apple is growing; why not WWDC?"; tinyurl.com/d72qhp5).

Bill Weinman

Stretching the definition of SaaS

→ I DON'T QUITE understand how SaaS

can be installing software on your own machine that you pay for on a subscription. That seems like stretching the definition quite a bit. By that definition, iPhone apps are SaaS because you pay for the "service" of installing their software ... but clearly it is not SaaS if SaaS is defined in a normal context.

I also find it interesting that Microsoft lumped together a bunch of products and called them all "Office 365" shortly before announcing what great strides they have made in selling Office 365. Is this an increase in selling the SaaS Office 365 or the "SaaS" Office 365? (Re: "Which SaaS vendor just passed the billion-dollar mark? Microsoft"; tinyurl.com/cdcg6dn)

Ian Ray

Apple's waning cool factor

→ MY 13-YEAR-OLD SON who has an iPod and iPad convinced me to replace my old BlackBerry with the iPhone 5 when it came out. Yesterday he told me "Dad, I want an HTC One" — kinda blew me away. He was talking up the specs and apps he sees online (Re: "If Android is 'cooler' to younger users, Apple could be in trouble"; tinyurl.com/cbo3tvh).

I agree with the premise of the article and I'm just getting used to iOS and was considering a MacBook to replace my Lenovo at home. I think Apple has a fight on its hands.

Chad Heidema

Your smart-phone is your computer, everything else is just screens.

Windows 8 'advantages'? Not so fast

→ AND IT STRIKES me how many of these advantages Microsoft seems intent on losing by driving users away from the desktop. Extensive library of software? Backward compatibility? Games? These all disappear if everyone is forced to Metro. Multiple monitors? Multitasking? Neither is a strong point of Metro (Re: "12 ways Windows 8 dominates the OS competition"; tinyurl.com/c6tohta).

Many of these advantages exist only if Microsoft is smart enough to retain the desktop. This is not a guaranteed thing.

Brett Turner

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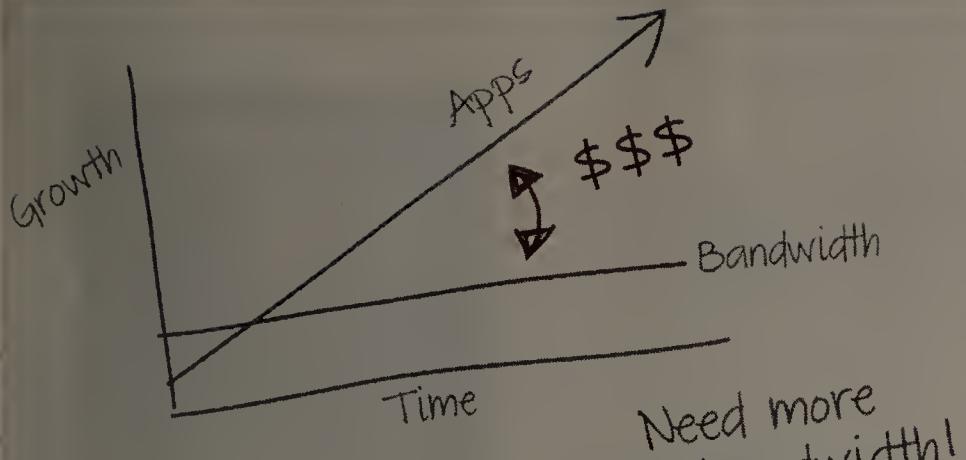
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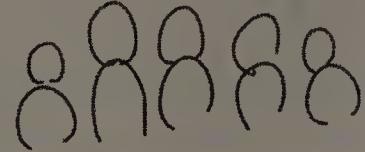
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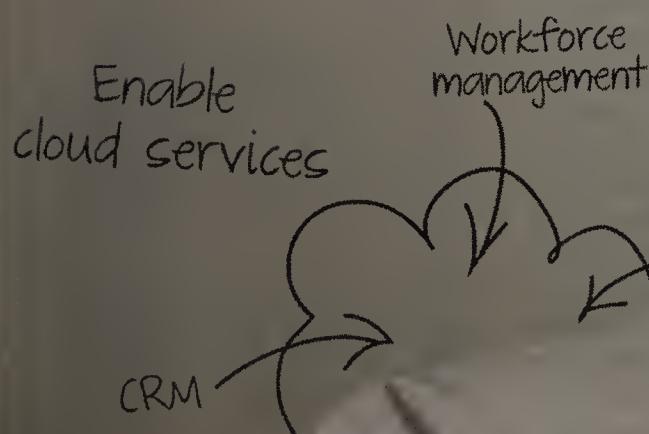
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Intel gets a new chief

AFTER A SIX-MONTH

vetting process, Intel named Brian Krzanich as its next CEO, succeeding Paul Otellini, who will officially hand over the reins of the chip giant on May 16. Krzanich, who has worked as COO and senior vice president up until now, beat other internal candidates being considered for the post, according to industry insiders. They include Stacy Smith, Intel's CFO and senior vice president, and Renee James, senior vice president and general manager of software and services. All three were promoted to senior vice president on Nov. 20, the same day Otellini's retirement was announced. Otellini's successor will have the task of maintaining Intel's top spot in the slumping PC market while trying to dislodge ARM from the fast-growing mobile market. Intel's processors are used in just a handful of mobile phones and tablets, and 52-year-old Krzanich will have to get device makers to adopt the company's mobile Atom processors. It will also be up to the new CEO to fix Intel's faltering ultrabooks strategy. tinyurl.com/d4zlb3p



IBM appliance hungry for data

PREPARING ITS customers to join the emerging 'Internet of things', IBM has released a new appliance built to manage and route a voluminous amount of machine-to-machine small data messages. The IBM MessageSight appliance is capable

of processing 13 million MQTT (Message Queuing Telemetry Transport) messages per second arriving from as many as 1 million end-nodes. Is there a need for such scale? Could be, according to IMS Research, which estimates there will be as many as 22 billion embedded systems and other portable devices connected to the Internet by 2020.

Collectively, these systems may produce more than 2.5 quintillion bytes of new data every day. tinyurl.com/c94axxs

BYOD march continues

ABOUT HALF of the world's companies will enact BYOD programs by 2017 and will no longer provide computing devices to employees, Gartner predicts. Ultimately, only 15% of companies will never move to a BYOD model, while 40% will offer a choice between BYOD and employer-provided devices, says Gartner analyst David Willis. Still, while most IT executives surveyed by Gartner think well of BYOD, the majority of leaders don't understand the operational benefits and only 22% "believe they have made a strong [BYOD] business case," according to the report. tinyurl.com/col85cd

Microsoft links Skype to Outlook.com

MICROSOFT IS rolling Skype in with its free Outlook.com email service, giving customers the ability to fire up VoIP calls directly from their mail inbox. The new Skype for Outlook.com service includes both audio and video calls, so together Skype and Outlook.com will support voice, video, email and instant messaging. Once Skype has been linked to an account, audio and video call buttons appear in the same window with IM chats. If a user is reading email and wants to call the sender, the user mouses over the picture of the sender that appears with the email. Skype for Outlook.com is part of a larger effort to integrate Skype with existing Microsoft platforms. It's already



IT video

Get zapped while playing video games

A research project on show at the Computer Human Interaction conference in Paris uses a small electrical current to give the sensation of force feedback while gaming. tinyurl.com/c6xggdx

integrated with the Microsoft Lync unified communication platform for voice calls, instant messaging interoperability and shared presence information. tinyurl.com/dxcylhp

Obama nominates Wheeler as new FCC chairman

PRESIDENT BARACK Obama has nominated telecom trade group veteran Tom Wheeler (pictured below, left) to be the next chairman of the FCC. Wheeler's nomination, announced last week, ends weeks of speculation that he was the top choice to replace outgoing



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Chairman Julius Genachowski. Wheeler, a managing director at Washington, D.C., venture capital firm Core Capital Partners, served as president of the National Cable

Television Association from 1979 to 1984 and as CEO of mobile carrier trade group CTIA from 1992 to 2004. In 2009, he led the Obama transition team focused on science, technology, space and arts agencies. tinyurl.com/c87mhzb

PARITY BITS

75%

The number of European adults that access the Internet regularly, and more than half of them own two or more connected devices.

SOURCE: FORRESTER

Certifying cloud prowess

AMAZON WEB Services has launched a global certification program that will allow solutions architects, systems operations administrators and developers to get proof of their cloud know-how. The new program aims to certify the technical skills and knowledge associated with building secure cloud apps using AWS technology, and there are three levels to choose from: associate, professional and master. To earn a certification, candidates must pass an exam, which will be administered through Kryterion testing centers. Training and other resources will be available from Amazon. tinyurl.com/cdgvc47

GOOD BAD UGLY



Improv troupe rescues walking texters from themselves

THE SCENE-MAKING Improv Everywhere troupe has released a pair of videos in which it pokes fun at people who can't take their eyes off their texting devices even while navigating busy streets in New York City. Improv Everywhere's solution for safeguarding the dangerously oblivious: Seeing-eye People. The Improv Everywhere gag, done in collaboration with BuzzFeed, involves a supposed Department of Transportation pilot initiative in which orange-vested workers leash up others who walk and text on their smartphones. Recent research found that pedestrians who text are four times less likely to look before crossing the street, obey traffic lights, etc., as those who aren't staring at their gadgets.

Pick on someone your own age!

AGING NETWORKING protocols (such as Network Time Protocol and SNMP) still employed by nearly every Internet-connected device are being abused by hackers to conduct DDoS attacks. Security vendor Prolexic found that attackers are increasingly using the protocols for what it terms "distributed reflection denial-of-service attacks" (DrDos), where a device is tricked into sending a high volume of traffic to a victim's network. Prolexic wrote in a white paper: "When these protocols were developed, functionality was the main focus, not security."

Twisted tablet talk

BLACKBERRY CEO Thorstein Heins mentioned in a Bloomberg interview last week that he thought that "In five years I don't think there'll be a reason to have a tablet anymore." He was quickly denounced on Twitter and in the press for ignoring the iPad, not owning up to the failure of BlackBerry's own PlayBook tablet, and in general for "trashtalking" tablets and "being hopelessly out of touch." But perhaps he's not quite as out of touch as he's painted. For one thing, he actually said something quite different from what everyone claims he said in 2 different interviews (for example, he specifically referred to it being very hard for most companies to make any money on the hardware side).



The cloud's the limit for new switches

Companies add scale, virtualization hooks to take platforms beyond the data center

BY JIM DUFFY

CLOUD SCALING will be all the switching rage at this week's Interop. Three major vendors last week took their platforms deeper into and then beyond the data center, outdueling each other on server access density and software programmability, two key attributes needed for the virtualized gold mine called the cloud. And in so doing, they have raised the bar and perhaps set the stage for one of the more anticipated announcements in SDN switching from Cisco spin-in Insieme.

Arista Networks, HP and Brocade unleashed new switches, modules and software, including SDN tools, designed to scale their platforms and fabric architectures into the hundreds of thousands of 10G-attached servers. The SDN tools are intended to enable automated provisioning and management of those large-scale environments through industry-blessed interfaces like OpenFlow and OpenStack.

Arista's announcement of the 7500E modular spine switch, in particular, is leading to speculation on what Cisco's Insieme spin-in might have coming later this year. Arista reloaded its 3-year-old 7500 with the 7500E, which among other goodies features 10/40/100G Ethernet interfaces — on the same port.

The 7500E scales to 96 100G ports in a single 11 RU chassis, but Arista also took the 10G server access density far beyond what Juniper claimed for QFabric in 2011, and what HP quadrupled last week: 100,000 servers in a two-tier design vs. HP's 24,000, and QFabric's 6,000 in a single-tier.

"I think it is intended as a pre-emptive move on Arista's part," says Brad Casemore, data center networking analyst at IDC. "It will be interesting to see whether they've anticipated Cisco's next move with Insieme."

Some expect Cisco to spin in Insieme and roll out its product line in the third or fourth quarter. Insieme is also believed to be working on a controller for its switches so they can be programmed in a Cisco ONE environment.

The 7500E is a 30Tbps, 14 billion packet/sec non-blocking switch housed in the same 11 RU chassis as the 7500. Densities per chassis are 1,152 10G, 288 40G or 96 100G Ethernet.

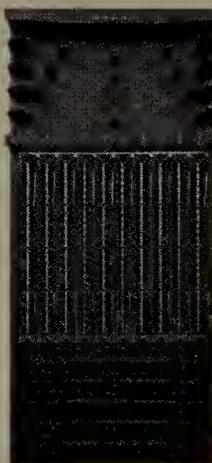
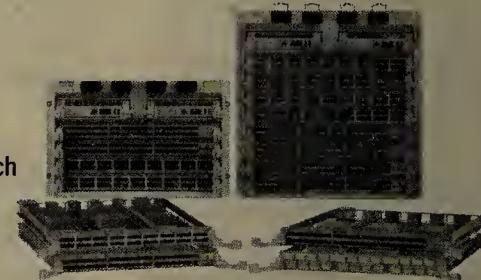
The most unique aspect of the Arista switch is its triple speed interfaces. They come 12 a board, and with embedded optics are software configurable between 10G, 40G

The Contenders

Comparative look at new switches unveiled by Arista, HP and Brocade

Arista 7500E

- Scales to 96 100G ports in a single 11 RU chassis
- 100,000 10G servers in a two-tier design
- 30Tbps, 14 billion packets/sec non-blocking switch
- Densities per chassis are 1,152 10G, 288 40G or 96 100G Ethernet



HP FlexFabric 12900, 11900

- 12900: 16- and 10-slot chassis that are OpenFlow 1.3-enabled and can support up to 36Tbps of non-blocking fabric switching
- Up to 768 10G and 256 40G Ethernet ports, with IEEE Data Center Bridging and ANSI Fibre Channel over Ethernet support
- 24,000 10G servers in a fabric
- Support for TRILL and Shortest Path Bridging fabric technologies
- 11900: supports OpenFlow 1.3
- 7.7Tbps non-blocking fabric
- Up to 384 10G and 64 40G Ethernet ports
- Support for TRILL and SPB fabrics, FCoE and Data Center Bridging

Brocade MLXe and NetIron CES

- MLXe: four-port 40G Ethernet interfaces
- Densities of 128 40G per chassis
- End-to-end multitenant 40G data centers with Brocade VDX switches
- NetIron CES: four-port 10G modules extend the reach of Carrier Ethernet
- Double the previous 10G port densities from two to four

and 100G. Arista says these integrated optics in the line card modules offer a 10x reduction in the cost of deploying 100G — down to \$10,000 per port, with optics.

Arista says the 7500E can support more than 1 million VMs and software-defined automation through the switch's Extensible Operating System (EOS). Through EOS, the 7500E supports Arista's DANZ data analysis application for traffic visibility and tap-aggregation; Rapid Automated Indicator of Link-Loss (RAIL), for rapid convergence in big data analytics and Hadoop applications; VM Tracer, for networkwide workload mobility; and Health Tracer, for switch-level diagnostics and traceability of key performance indicators.

The 7500E series switches and line cards

are available now. List prices start at \$99,995 for the switch and \$10,000 per 100G port, \$2,200 per 40G and under \$600 per 10G port.

Arista will have to fend off HP, which refreshed its switch line and fortified its SDN portfolio with three new systems and a router, along with management and provisioning software extensions.

In the core, HP unveiled the FlexFabric 12900, 16- and 10-slot chassis that are OpenFlow 1.3-enabled and can support up to 36Tbps of non-blocking fabric switching, according to HP. The 12900 sports up to 768 10G and 256 40G Ethernet ports, with IEEE Data Center Bridging and ANSI Fibre Channel over Ethernet support and in-service software upgradability.

The 12900 also supports industry-defined fabric technologies TRILL and Shortest Path Bridging, which replace Spanning Tree with a multiple active path topology optimized for east-west traffic flows between data center racks.

The 12900 is aimed at Cisco's Nexus 7000 "F" and "M" switches, and Juniper's QFabric and EX9200.

In the aggregation layer, HP unveiled the 11908 switch, which is also supports OpenFlow 1.3. The 11908 features a 7.7Tbps non-blocking fabric that can support up to 384 10G and 64 40G Ethernet ports. Like the 12900, the 11908 also supports TRILL and SPB fabrics, FCoE and Data Center Bridging, and in-service software upgrades.

The 11908 is also aimed at Cisco's Nexus 7000 and Juniper's QFabric. HP claims a fourfold increase over Juniper in 10G fabric density — 24,000 to 6,000 — and twice that of Cisco.

HP also unveiled a virtual switch to run under server hypervisors. The FlexFabric Virtual Switch 5900v supports the IEEE's Ethernet Virtual Bridging — a.k.a. "VEPA" — standard for offloading some switching capabilities from the server to a physical switch. The 5900v is optimized for VMware environments and supports mobility and management of network policies for virtual machines configured through VMware hypervisors.

The new router is called the HSR 6800. It combines routing, firewalling and VPN in a system with a 2Tbps backplane and 420Mbps of routing throughput. It supports 32 10G Ethernet ports and 687 microseconds recovery through HP's Intelligent Resilient Framework virtual chassis capability.

The HSR 6800 is also "40/100-ready," HP says. It will go up against Cisco's ASR 1000 router.

Analysts say HP's launch shows progress from the company in data center switching, and in its 4-year-old 3Com acquisition.

"These are behemoths of switches, and certainly give HP a product advantage," says Zeus Kerravala, principal analyst at ZK Research. "Also, the support for TRILL, SPB and DCB I thought was interesting as customers do not have to choose."

Still, there might be some gaps for HP to fill, Kerravala notes.

"Is there any interoperability with the older H3C line?" he asks. "Customers may be faced with a rip and replace."

"In the data center, the networking products are great but I don't think HP has a broader 'HP' story, a la Cisco's Nexus + UCS," Kerravala adds. "I agree that HP has all the parts, but they haven't built a great counter story. Cisco customers rave about UCS and the ability to create service profiles that are for rapid creation of services. HP has the networking products and needs to build a better 'HP' story."

HP FlexFabric 12900 switches are expected to be available in October. HP says pricing will be available at that time. The 11908 switch is expected to be available worldwide in June at a starting price of \$83,000.

Virtual switch 5900v is expected to be available in October. Pricing will be available at that time. The HSR 6800 router series is available now at a starting price of \$46,000.

Brocade's hardware and software enhancements are designed to better integrate and align physical and virtual resources.

For virtual networking, Brocade rolled out the vRouter virtual router, obtained from its recent acquisition of open source networking software company Vyatta; and the Virtual ADX Application Delivery Switch. For physical networking, the company unveiled new modules for its MLXe core router and NetIron Carrier Ethernet switch, as well as updated operating system software for that product.

The Brocade Vyatta 5400 vRouter is software for highly virtualized data centers. It is designed to enable the configuration of multilayer networks that can be deployed, configured or changed on demand. Brocade Vyatta vRouter is already deployed in Amazon Web Services, and supports VMware, Microsoft, Citrix and Red Hat hypervisors.

Release 6.6 of the vRouter includes support for multicast routing and dynamic multipoint VPN (DMVPN), for secure transmission of content to selected endpoints.

Brocade Virtual ADX is designed to increase the speed of application resource and services deployment for cloud environments. The software controls application management and provisioning via the SOAP/XML API, enabling integration with third-party or homegrown orchestration and automation tools, Brocade says.

That API, along with support for OpenScript, allows for programmatic control of Layer 4-7 functions in a virtualized infrastructure, the company says. Virtual ADX is

also intended to simplify orchestration of the application delivery network, and provide the ability to validate, test and replicate production or quality assurance environments on demand.

For physical networking, Brocade rolled out 40G Ethernet interfaces for its MLXe core router, higher-performance modules for the NetIron CER routers and expanded SDN capabilities in the NetIron OS.

The new four-port 40G Ethernet module for the MLXe features wire-speed performance for connecting with Brocade VDX/VCS fabric switches to construct an end-to-end, multitenant 40G data center. It also allows the router to support 128 40G ports per chassis.

The 40G-enabled MLXe will go up against Cisco's Nexus 7000 and 6000 switches, and Catalyst 6500 with 40G interfaces; Juniper's EX9200 and QFabric switches; HP's new 12900 and 11900 switches; and those from Dell, Extreme, Huawei, Alcatel-Lucent and other Ethernet switching combatants. It may also soon face core 40G competition from Arista Networks.

For smaller data centers that are integrated into Carrier Ethernet networks, Brocade's new four-port 10G modules for the NetIron switches are designed to extend the reach of Carrier Ethernet and enable rapid deployment of new services at the network edge.

The updated operating system software for the NetIron switches enhance high-performance routing and SDN capabilities, Brocade says. The new release supports OpenFlow Hybrid Port Mode technology, to help customers simultaneously deploy OpenFlow and traditional routing on the same port for a migration path to SDN. ■

Software-defined networking (SDN)/network virtualization promises to reshape enterprise networks, enabling companies to keep pace with fluid computing environments powered by virtual servers and cloud by decoupling network control from the data forwarding plane. Join Network World's discussion on SDNs at its IT Roadmap in Chicago on May 14. Attendance is free, registration required: tinyurl.com/d9hxax

Enterprise social net software grows up

BY JUAN CARLOS PEREZ,
IDG NEWS SERVICE

ENTERPRISE SOCIAL networking software, which offers social media capabilities adapted for workplace collaboration like employee profiles, activity streams, microblogging and document sharing, has evolved from a “nice to have” to a “should have” status in enterprises.

Picking up on that shift, Microsoft plunked down more than \$1 billion last summer to buy Yammer — at the time a leading independent provider of ESN software — in order to boost ESN capabilities primarily in its collaboration server SharePoint and also in other products like Office, Lync, Outlook and Dynamics.

It's now clear that Microsoft's effort to integrate Yammer with SharePoint is complex and that a fusion of the products will take at least two more years to complete.

For now, the integration deliverables will be modest. Microsoft said in March that Office 365 customers will get the option this summer to replace SharePoint Online's activity-stream component with Yammer's activity stream.

In this basic integration, when users click on the Yammer link, it'll open up a new browser window and ask them to sign into Yammer. In the same timeframe, Microsoft will deliver a Yammer application that will let users embed a Yammer group feed into a SharePoint site, both with SharePoint Online and with SharePoint 2013 servers installed on customer premises. Microsoft will also make it possible for customers to replace the newsfeed in SharePoint 2013 servers installed on premise.

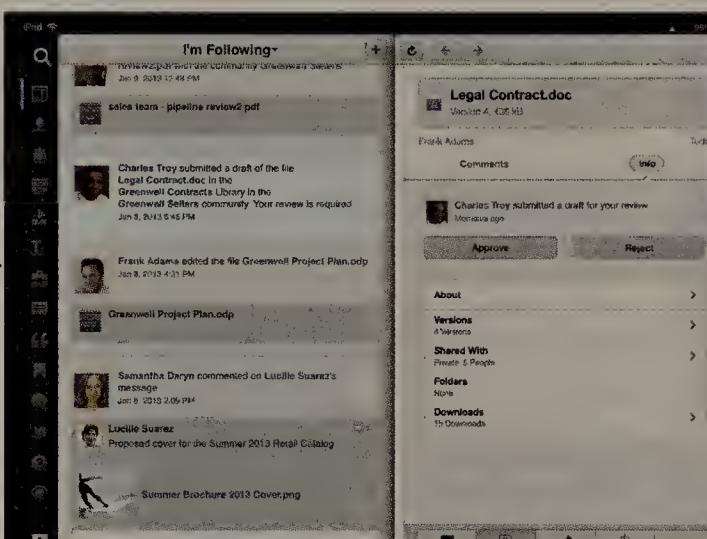
Later in the year, the integration will deepen with a single sign-on and the inclusion of Yammer in the Office 365 interface. Yammer will also gain integration with Office Web Apps, the browser-based version of the Office productivity suite, before the end of the year.

In 2014, Office 365 customers can expect integration between Yammer and other Office 365 components beyond SharePoint, such as Lync and Exchange. Yammer is also being integrated with Microsoft Dynamics enterprise software.

SharePoint, first launched about a dozen years ago, has been the 800 pound gorilla of collaboration servers for a long time, but it has struggled to keep up on the enterprise

social networking front.

Microsoft increased SharePoint's native ESN features in the 2010 and in the latest 2013 version of the product, but as its acquisition of Yammer shows, even the company recognizes it needs to do more.



IBM Connections enterprise social networking tool

“The issue with SharePoint has been that enterprise social moves very fast and SharePoint doesn't, because it's a big, complex product” that does many other things, says Forrester Research analyst Rob Koplowitz.

In fact, SharePoint's ESN limitations opened up the opportunities for other vendors to come out with products that augment or replace SharePoint for ESN.

Below we offer analysts' suggestions for CIOs regarding SharePoint, Yammer and competing ESN tools at this market's crossroads.

Not all ESN vendors are equal

Companies that make ESN software fall into three categories: collaboration platform companies, business application vendors and specialty players.

Microsoft falls into the first category, along with others like IBM with its Connections product and Cisco with WebEx Social. These are big software vendors that have other collaboration and communication products.

Then there are enterprise application vendors that have added ESN complements for their core ERP and CRM suites. That's the case of Salesforce.com with its Chatter product and of SAP with Jam. Middleware vendor Tibco has an ESN product called Tibbr.

There are the smaller niche players like Jive Software, Socialtext and NewsGator which focus mainly on their own ESN products.

Thus, a criteria for CIOs, especially those whose organizations aren't yet using ESN

software, could be to look at the vendors they're already doing business with.

There are pros and cons that are evident on the surface for vendors in each category. The vendors in the first two categories are larger, with more resources, and thus can be assumed to be more stable. They can also offer the promise of broader software stacks that are natively integrated with their ESN components.

However, they will inevitably approach ESN from their own perspectives, and it's not clear to Larry Cannell, a Gartner analyst, which one will emerge as the most appropriate.

“Is ESN an extension of other unified communications, collaboration and email products? Or is it an extension of business applications,” he said. “We don't know how that's going to shake out yet. There are credible arguments on both sides.”

Moreover, the smaller specialists not only focus exclusively on ESN, but they also often find it easier to move faster when adapting their products to customer feedback and technology innovations. They also don't have to comply with the competitive mandates of a larger corporate parent, and can thus be more agnostic in their partner relationships and third-party software integrations.

Determine your level of comfort with the cloud

A key consideration for CIOs should be their organization's willingness to have their ESN software running in a public cloud.

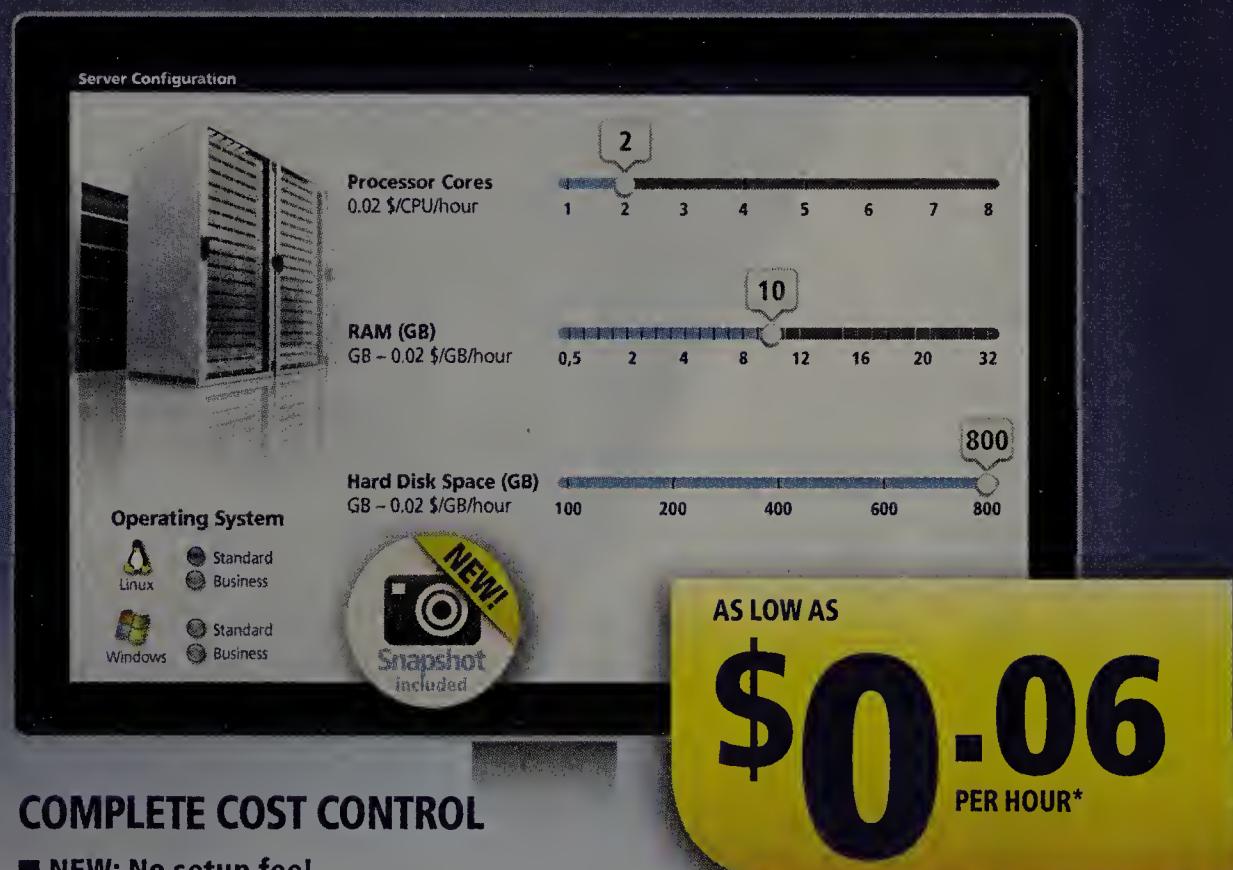
ESN is most effective when it becomes an underlying layer of social collaboration capabilities that are integrated into the applications employees use on a daily basis, whether it's email clients, CRM software, ERP applications, office productivity applications or videoconferencing wares.

IT leaders need to decide whether their ESN deployments will be all on premises, all in the cloud, or in a hybrid scenario, and then look into what the different vendors offer.

In the case of Microsoft, most SharePoint deployments have been on customer premises. However, the company has made it clear that the future of SharePoint and Office products in general is in the cloud via Office 365.

So Microsoft will support both models, but it is placing the development and innovation emphasis on the cloud-only Yammer and on SharePoint Online, the cloud version of the product that is part of the Office 365

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cloud collaboration and communication suite.

It's not clear to what extent Microsoft will be able to maintain in sync SharePoint Online and SharePoint server, assuming SharePoint Online will be upgraded more frequently and Yammer will remain cloud-only, Cannell says.

Koplowitz added: "If Yammer is the bet, then what about those folks who want SharePoint but can't go to the cloud?"

In light of those questions, CIOs who want to keep their SharePoint server on premises can rely on ESN add-ons like NewsGator's. NewsGator's Social Sites is designed for SharePoint implementations on customer premises or in dedicated private clouds. Recently, the company has been working on extending Social Sites so that it will function not just as a SharePoint add-on, but also play that part for other collaboration and business applications.

Other products offer cloud, on-premises and hybrid deployment options, including IBM Connections, Jive and Tibbr, while vendors like Salesforce.com stick with a cloud-only approach with its Chatter product.

ESN software may be used in your company without your knowledge

Some CIOs still pondering what ESN software to choose would be surprised to find out that employees have done an end-run around IT and adopted ESN tools already.

In fact, a lot of Yammer's adoption has happened in this way, as pockets of employees and managers sign up for the service and invite colleagues to join their network without consulting the IT department.

CIOs and IT managers on this quest should refrain from shutting down networks.

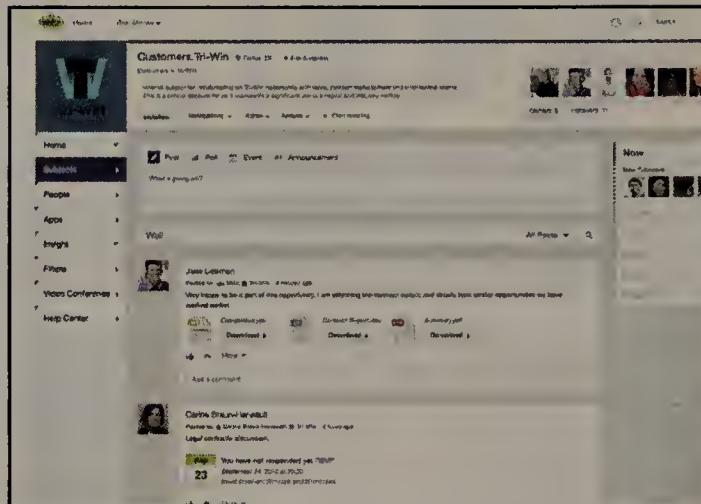
"Don't look at this like a policy violation but as an opportunity to learn how you could use these tools," he says.

IT leaders should establish a relationship with these first adopters and build on their interest for ESN in order to get others enthused and eager to adopt ESN software.

Look elsewhere or keep what you have if it works

IBM's Connections, first released in 2007, has been a solid product, in particular as an ESN complement for SharePoint, according to Koplowitz.

In its most recent release this year, Connections is aiming to become a broader competitor with stronger document and content management capabilities and improved



Tibbr's ESN tool

analytics features. IBM is also pushing ESN bundles tailored for human resources and marketing departments specifically.

A few years ago, Electrolux, a Swedish appliance vendor, decided it needed to give its employees an ESN tool that would help spur innovation and collaboration. The company used SharePoint, but decided the native ESN capabilities in the product at the time weren't enough for its needs, and deployed IBM Connections. Today, the company uses both products—SharePoint for more static intranet functions like team sites, and IBM Connections for social collaboration interactions like microblogging and activity streams.

"We wouldn't have been able to accomplish what we wanted to do with the stand-alone SharePoint," says Ralf Larsson, Electrolux's director of online employee engagement and development. "Connections and SharePoint can coexist because they are really good at different areas."

As for Jive Software, Koplowitz sees it taking advantage of its ability to move fast and to be agnostic with regards to its interoperability with third-party business software.

Salesforce.com's Chatter has also become a dominant product in the ESN market, says Koplowitz, who has been surprised by Tibbr's success.

Cannell calls Tibbr "one of the most interesting" ESN products.

InterPortPolice, an inter-governmental agency for collaboration among airport and seaport law enforcement authorities in the U.S. and abroad, adopted an ESN tool recently. Early in its selection process it crossed out SharePoint because of its poor mobile access, a recurrent criticism of the product.

Instead, it chose Tibbr, whose mobile support met the agency's needs. "Ninety percent of our people are away from their desks 90%

of the time," says Jay Grant, Secretary General of InterPortPolice.

It also found SharePoint's enterprise social collaboration features lacking, and thought the product better suited for document management tasks than for people-centric collaboration, he says. Tibbr gives the agency the type of social collaboration interaction it was looking to provide its users.

Microsoft promises big rewards for those who go with SharePoint-Yammer

The rewards from the deep integration of Yammer with SharePoint, Office, Outlook, Lync, and other Microsoft products will be tremendous, says Adam Pisoni, a Yammer co-founder who is now an engineering general manager in the Microsoft Office Division.

"From a product perspective, combining social with Office and SharePoint is going to yield a product that has the most integrated experience around document collaboration, creation, co-authoring and social than any other offers out there," he says.

As the fusion of Yammer with SharePoint and the other Office 365 tools progresses, the interfaces and user experience will be unified and eventually become a single product that tightly integrates all of the functionality.

That vision is exciting for Dawn Gartin, collaboration manager at Manhattan Associates, a supply chain software vendor. The company started using SharePoint in 2007, but about 18 months ago it added an ESN tool. It picked Yammer, a few months before Microsoft acquired it.

The sooner Microsoft is able to fully integrate the products, the better, as far as she's concerned.

Manhattan Associates, which uses SharePoint 2010 on-premises, is now drafting its plan for upgrading to SharePoint 2013 and possibly shifting some tasks for SharePoint Online, thus having a hybrid deployment.

The company uses SharePoint for its intranet and Yammer for employee interaction and collaboration.

Its users prefer Yammer, which was quietly introduced by the CFO and achieved 96% adoption in about a month among the about 2,400 employees. SharePoint, after six years of use, is nowhere near that level of adoption.

The company, which has a bring your own device policy regarding smartphones and tablets, is eager to see SharePoint extend its mobile access, she said. ■



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20 must-have technologies for SMBs

BY JEFF VANCE

RUNNING A small business isn't easy. But here are 25 must-have technologies that will help you make your SMB a success.

First, let's start with one of the biggest challenges for SMBs: staying organized. For years, my accounting system was a big envelope. Recently, I noticed late-night commercials for the **NeatDesk** scanner. I was embarrassed to admit that it looked like a good idea, and when I was invited to meet with the company at CES and demo a scanner, I bit.

I came back from CES with my typical jumble of paperwork and business cards. Instead of stuffing them into a folder, I fed them into the scanner, which captured each receipt or card, categorized it and stashed it into an appropriate folder, such as "travel receipts" or "2012 taxes."



But what really made life easier was the mobile client. Now, instead of filling your pockets with receipts, you just snap a photo of your receipt and load it into the cloud-based filing system.

Neat's scanner also allows you to create and file PDFs from whatever paperwork lands on your desk. Then, you can use **Canvas** to turn paper-based forms into mobile apps. Many Canvas apps already exist for such industry sectors as healthcare, education and construction, but you can also send your form to Canvas, and they will turn it into a mobile app for \$50.

Sales, marketing and support

The marketing tool that was recommended to me most often by small business owners is **Vocus**. Vocus recently rolled out a new feature, Buying Signals, which scours social media to find people who are seeking particular products or services. Then, it puts you in

touch with the leads most relevant to your business. For instance, if you're an optometrist and someone in your city tweets "I just broke my glasses," you'll be alerted. Pricing starts at \$250 per month.

The trouble with leads, though, is that most prospects do not buy immediately. Instead, they'll want to do research, kick the tires and may even have objections you must overcome. This is where many small businesses fail: They don't follow up.

According to Robert Clay of Marketing Wisdom, 63% of people requesting information on your company today will not purchase for at least three months, and 20% will take more than 12 months to buy.

Many small businesses can't afford the expensive CRM suites that would help guide them through the process of nurturing leads and overcoming objections, so they lose out on potential sales. In fact, according to Clay, 92% of salespeople have already given up before the prospect is ready to buy. If you want to be in the 8% still standing consider **FollowUp.cc**, which lets you schedule a follow-up to an email the minute you respond.

In the Bcc area, simply put 12hours@followup.cc or March30@followup.cc, and FollowUp.cc will automate the follow-up process for you, sending you email reminders, allowing you to snooze those reminders if you're busy, integrating with your calendar, and automatically importing the contact info of those you follow up with most frequently. A browser plug-in even lets you schedule follow-ups for websites, rather than keeping a million and one tabs open — like I do.

Pricing ranges from free (for a plan with 20 reminders/month) to \$99/year for a plan with added functionality and unlimited reminders.

viClone helps SMBs tackle customer support challenges. Providing consistent, high-quality customer service is a major undertaking for SMBs. Online customer service is the easy choice for SMBs since phone support is prohibitively expensive. However, even online customer service and support can carry big price tags, especially in labor costs.

Moreover, most automated systems are targeted at the enterprise and are too expensive for SMBs.

viClone's virtual agents are designed for SMBs. The

agents have self-learning capabilities and can support more than 35 languages.

Getting paid

Now that you have customer leads, you need to have the tools in place that let them buy from you. By now most people know about **Square**, a high-flying startup that gives retailers a small card reader that attaches to smartphones or tablets via the headphone jack.

A Square alternative is **Leaf**, which provides you with a purpose-built tablet. The tablet serves as your point-of-sale (POS) infrastructure. You can augment that by downloading apps for other smartphones in your business. The Leaf backend includes business management software and customer care tools.

At \$50 per month, Leaf is more affordable than many other mobile POS solutions, although Square offers more flexibility to start small — 2.75% per swipe (or up to \$275 per month).

Analyzing data

Big data isn't just for big business anymore. Real-time customer analytics service **Woopra** allows small businesses to identify noteworthy customers. You can spot hot leads, rescue lost customers, speed up customer onboarding, etc. Woopra also helps you spot overall trends in customer behavior, such as pinpointing where exactly most prospects bail out of the sign up or buying process. Pricing ranges from free for a basic account to \$500 per month for a high-octane account that measures 10 million actions per month and retains data for two years.



Prism from SiSense offers big data as a service to help you crunch data from a variety of sources so that you can

create business strategy based on data analysis. Prism's drag-and-drop interface lets you create data mashups and visualizations from SQL Server, Oracle, MySQL, PostgreSQL, Excel, CSV files, Google, Salesforce.com, Zendesk and other databases.



Prism helps you visualize trends, identify critical metrics and formulate complex business queries without having to write a single line of code. Pricing is \$50 per user per month, or you can contact the company for a flat fee per server.

Hiring

Hiring is, perhaps, the single most stressful event for small-business owners. Getting the right candidate isn't easy, and hiring the wrong person can devastate a small business.

First, how do you even determine an appropriate salary? Sure, you can scour job ads trying to find ballpark figures, but a better option is to use **PayScale**, which has collected salary and career data from more than 35 million people, covering 12,000 job titles and 1,100 distinct industries in 150 countries.

But how will you determine whether a candidate is a good fit? Services from **Pairin** and **Hireology** should help. Pairin focuses on "a candidate's behavioral DNA and potential for success, instead of the time-consuming evaluation of a resume's historical data." Pairin identifies optimal interview candidates through the modeling of existing top employees in the same positions based on 137 performance drivers. Pairin also lets you compare a candidate to an existing in-house employee. Pricing ranges from \$49 for a one-to-one comparison to \$199 per month to assess unlimited employees and unlimited applicants against job listings.

Hireology, meanwhile, has analyzed thousands of interviews across hundreds of companies to identify 67 traits that help predict the likelihood of success in a specific role. The process starts when a business posts an opening. Hireology then asks you questions to zero in on the most appropriate traits. Pricing

starts at \$24 per month for a single opening.

Conferencing and collaboration

If you're like many small businesses, many of your employees may work remotely at least some of the time.

I know from experience that videoconferencing tools leave a lot to be desired. Enterprise-class tools may be too expensive for SMBs, while the low-cost (or even free) solutions like Skype don't always perform well.

Moreover, different users will already have different tools installed and will prefer to use what they know. **Blue Jeans Network**'s technology serves as the glue that holds all of these various conferencing tools together. It allows people to use whatever videoconferencing tool they want. Schedule a meeting, send users a link and all they need is an end device with conferencing capabilities.

Bitcasa is an online storage tool that offers 10GB of storage for free. You can get unlimited storage for \$69 per year. It includes mobile client tools, and although it is targeted at consumers, SMB features will be rolling out soon.

You can also elect to mirror all your devices to your Bitcasa Infinite Drive. Your files are then automatically and continuously backed up and available anywhere. Everything is still available offline, and your changes will sync up when you are back online.

Box and **Soonr** are online file sharing and collaboration services. Both let you securely share (and store) large files, while keeping them in sync across devices. Box for small businesses is priced at \$15 per user per month. Soonr's pricing starts at \$9.95 per month for three users.

Day-to-day operations

The two main tools many small-business owners use to run their businesses and track customer interactions are email and Excel spreadsheets. Most owners eventually realize that this approach leaves records scattered across various accounts, hindering sales and marketing efforts and even compromising the customer experience. Meanwhile, big CRM solutions like those from Salesforce.com and Oracle are out of reach for many SMBs.

Insightly combines CRM and project management functionalities in one application, so users don't have to manage multiple applications. The cloud-based solution, which tightly integrates with Google Apps, allows users to

easily keep track of customer interactions and manage leads, proposals, opportunities, projects and files from any device. Users can start with a free account and upgrade as needed. The most expensive plan, supporting up to 40 users, is priced at \$99 per month.

LiquidPlanner is a cloud-based predictive project management tool designed to execute millions of schedule calibrations over the course of a project.

LiquidPlanner helps focus teams on what's most important: strategic projects and tasks and/or those with the most revenue potential. Users estimate how long a task should take (giving a range), and after searching through calendar availability, vacation time and set priorities, LiquidPlanner calculates when various tasks should be completed, giving both best- and worst-case scenarios.

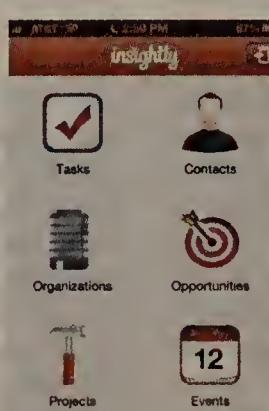
Staying secure

Like every other business, small businesses expose themselves to data breaches when employees are out of the office. One tool to help prevent this is **Pocket Desktop**, an encrypted USB drive that stores all of your important information (files, banking info, emails, etc.) and lets you take your desktop with you and keep it secure in the process.

Remove the USB drive from, say, a home PC, and you leave no trace that you were ever there, and there is nothing left over for someone to steal. A 4GB drive costs \$20, while a 16GB one is \$60.

Have you ever done something at a hotspot you shouldn't have? Maybe you checked your credit card account to make sure you paid your bill on time, or you logged in to your bank to check your account status. On public hotspots, this is risky business.

Hotspot Shield combines the malware protection of an antivirus program with the privacy capabilities of a VPN. Hotspot Shield encrypts your connection to a Wi-Fi network, and you can even use it with mobile devices. The service is free if you don't mind seeing ads, or you can remove the ads and get faster service for \$30 per year. ■



Insightly

Vance is a Santa Monica-based writer. He's the founder of Startup50, a site devoted to emerging tech startups, and he also founded the content marketing firm Sandstorm Media. Follow him on Twitter @JWVance.

Juniper switching boss talks SDN, more

Jonathan Davidson took over Juniper campus and data center switching when the two previously separate business units were combined following the departure of founding engineer R.K. Anand. Davidson has a service provider routing background at Juniper and Cisco, which is no coincidence — after five years in switching, Juniper has been unable to mirror the success it had in its first five years in service provider routing. But it did start from zero and surpassed at least six other incumbent vendors to attain the No. 3 position in the market. The company has more than 20,000 switching customers cultivated through organic development, Davidson notes. And as Juniper moves forward amid a forklift upgrade facing its EX core switch base and after an initial misfire on the QFabric data center switch, it's focusing on customer demands for simplification, agility and automation. Davidson discussed with *Network World*'s Jim Duffy some recent and future developments in Juniper enterprise switching.

Why did Juniper combine the data center and campus units?

When you're fundamentally trying to change an industry that hadn't changed in over 15 years or longer, you need to make sure you have a high performance team together, you need to make sure they're not distracted. So we created a business unit that was targeted for fundamentally disrupting the data center space, and that was our QFabric solution. But once you actually have that product out into the market, you actually get to a point where you want to find more synergies between these different organizations. We wanted to make sure that we were able to leverage the best of the EX product portfolio as well as the innovation we saw and continue to see in the QFabric portfolio. In bringing them together, we are able to leverage the best from both, and really enable our customers to have more choice.

But aren't the needs of the campus and data center drastically different?

If you look at the fundamental building blocks for technology and how we view things, I'm going to have to switch a Layer 2 packet whether I am in the data center or campus environment. So why have two different stacks of technology that are going to do almost the same thing? You're right in that there are unique requirements to both; that's how you actually package the systems together. Whether traffic runs East/West or



North/South depends more on the construct of the system rather than the underlying technology. Many customers use the same core switching platform for both their data center and campus environment. That's why customers have embraced our Virtual Chassis technology. They'll use the same Virtual Chassis in the campus and data center.

So will EX and QFabric eventually share the same ASIC and code base?

Whether you use an EX platform or a QFabric platform, it's running Junos. It's about simplifying the operations for our customers and that can happen across either one of the architectures or platforms or products our customers decide to go with. We fundamentally believe that if you look out five to 10 years from now, we call it the Path to Flat. We truly believe almost every data center is going to be a flat data center. We've translated flat to mean fabric. Any-to-any connectivity in the data center is important. If you truly have a flat network, you can have deterministic latency. In simplifying the Path to Flat, one of the things we're going to start to do is actually bring these two technologies together. So one of the things we're going to start talking to our customers about here pretty shortly — we haven't gone broadly with this yet — we're going to take that Virtual Chassis technology that tens of thousands of customers have deployed and put that onto our QFX top-of-rack switches.

This means I can start with a QFX ToR, have QFX at the top-of-rack and aggregation layer, and run that entire thing in a Virtual Chassis-based network. If I decide that I want to go even more flat, I don't need to throw any boxes out, I don't need to re-cable; I simply need to change the software and the configuration and actually add the QFabric Director and then I have a completely flat network and a centralized point of management, and I am able to grow from a few dozen 10G ports up to 6,000 10G ports without having to rip and replace any portions of my network, or re-cable.

If you have our Microfabric [the QFabric 3000-M Interconnect], you are able to go from zero to 768 10G ports, the QFX can act as the interconnect as well, and you can grow with that. We think that the interconnect is something that's a critical component and the [Broadcom] silicon family that we're using today will be able to continue into the future. We will use the most advantageous silicon for our customers. What's important to them is simplicity. But at the end of the day, 98% of our customers don't care what silicon is in the platform. They want to make sure that we're meeting their requirements or making sure that it's simple for them to use, and that they get the right price and performance.

What about Virtual Chassis for the QFabric Interconnect?

We'll be talking more about that at the end of the year.

What's selling more or in greater demand: the QFabric 3000-G Interconnect or the 3000-M?

When we go out and try to fundamentally change the way data center networks have been built for the past two decades, we came out with our QFabric single tier solution. And we decided to come out with a solution that scaled to over 6,000 10G ports in a single fabric. We could have easily come out with the smaller fabric first. But when you start to look at the logical scale issues, the issues that have to do with keeping 128 nodes all in sync at the same time ... if you solved for the small problem first you would have run into scaling incrementalism over time, and it would have taken us a much, much longer time to get to the scale that's necessary. Multichassis is pretty hard to do. Think of QFabric as a 128-node multichassis system that acts as a common,

single fabric. That's the scale of the problem that we solved, and when you look at what QFabric actually did, all of the components and what it looks like, I'll call SDN Version 1. You have an external director controlling the various nodes; you have an interconnect that it can control as well; and you can provision everything through a single point of management, with an out-of-band control plane. When we started building this there was no term called SDN. We solved the problem internally with all open, standards-based protocols. We use BGP to communicate inside of the fabric. SDN Version 2 from Juniper is going to be a combination of SDN Version 1 plus some of the things Bob Muglia mentioned around 6-4-1 and obviously the Contrail controller is going to be a big portion of how all of this fits together into what I call SDN Version 2.

What about OpenDaylight?

It's important that we work closely with industry leaders like VMware, not only on their hypervisors and virtualization technologies, but also where they're going. It's important that we work with Daylight. And it's critically important that we work with other third parties to actually make sure we have the right ecosystem partners around that. We are a big believer that the data center space is an ecosystem play. And if we try and go it by ourselves, we will not be as successful as we would be if we partner very tightly. The market has clearly told us that OpenStack is important; that VMware is important; that Daylight is important; and there will be a few other players that come out and tell us that that's important.

Which way do you point an SDN customer when you have SDN Version 1, Version 2 and OpenDaylight?

If I am a customer that is a VMware shop, more than likely I'm going to want to stick with the VMware path. As a networking vendor, all of our components must seamlessly integrate into that environment. Because I want to make sure that my applications are resilient, I want to make sure they're secure, I want to make sure that my applications can communicate with each other. So I don't think there's any confusion from that customer perspective. Infrastructure as a service is a different model. Many of them are VMware customers but a lot of them are looking to go down the OpenStack path. Through OpenStack, they can go down the Juniper/Contrail path, or OpenDaylight ... that's going to be a customer-by-customer decision. The key thing for us is to make sure that they understand what their options are and what they have available to them.

Why would a customer opt for Daylight over Contrail, and vice versa?

Once we know what Daylight is from a product perspective, I'll be able to answer that question. But it's still early and I think the targeted customer for Daylight is still new. Once the product exists there'll be inherent benefits to each one.

What's the SDN strategy for the rest of the EX portfolio?

We can put any of the EX9200 control plane protocols across our entire portfolio. You can change the data plane protocol as well (on the EX9200) because of how programmable the chip itself is. We will support OpenFlow on that product as well as other protocols I'm not ready to discuss today. So from a control plane perspective, we're set. From a data plane perspective some of (EX switches) require simply new chipsets in order for us to go and do that. But over time you're going to see more and more consistency across the switching portfolio as we continue to leverage the best of both worlds, both the EX9200 with Virtual Chassis on the EX side, as well as across the QFabric portfolio. A good example of that is Puppet, which is an automation tool predominantly used from a server admin, sys admin perspective. But the biggest pain point many of our network operations people feel in the data center is because the server people have virtualization, sys admins are able to fire up a new compute in seconds or minutes, a new application is seconds ... but then they have to go and file a network trouble ticket to get the network VLAN created. We've been able to put Puppet not only on QFabric, QFX, EX the entire portfolio — that's a powerful thing.

In introducing data plane programmability on the EX line, does that imply sharing the same silicon stream as the EX9200?

That's something we're not prepared to talk about today. But we are going to make sure that our fundamental goals of simplicity and automation are things we are going to continue to focus on for our key customers.

How's the reaction been among your EX8200 base to the EX9200?

It's actually been quite positive. They love the Virtual Chassis aspects of things. They love the fact that they are able to have one common core from the campus to the data center. Manageability ... doesn't change in any way, shape or form for them with the EX9200.

What's the migration or trade-in program you have for those customers?

We are going through and reaching out to our EX8200 customers and making sure they understand where we are going, make sure they understand what the platform is and

what they're going to get out of the EX8200 over the next five to 10 years. And with that comes the conversation of, is there even a need to make a transition. Most of the time there isn't a need to make a transition. Most of them are quite happy with what they have today. But for those customers who would like to transfer to something that is newer and more programmable, we'll certainly make sure that the transition is a seamless one for them.

Do you expect to retain your EX8200 base as they make that transition?

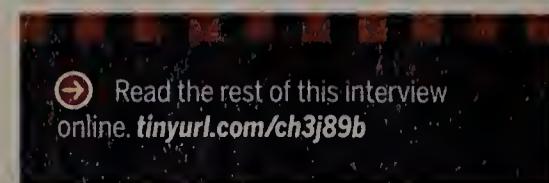
For those customers who do want to make any transition we certainly expect to make sure that they stick with the EX portfolio. We think that it offers significant benefits for them; they think that it offers significant benefits for them. And the growth that we've experienced in that market we expect to continue as well with the 8200 and the 9200.

Are you offering an even-up trade-in program for the 9200?

None of the incentives we're sharing publicly. We are sharing them with our customer base.

Does the EX9200 exclude QFabric from any opportunities?

If we look at how customers have evolved over time, in talking through where we were with the solving the biggest problems first, we came out with a 128-node system, and then last summer we launched the 16-node Microfabric. What we have found is that customers' evolution in thinking about what they call failure domains has evolved over the past five years. If you went to many customers five years ago they would say, just give me a bigger and bigger and bigger switch. Many customers are still comfortable with the 6,000 10G ports in a single domain. But there are certain customers who want a smaller failure domain. And so they will go and purchase multiple versions of a Microfabric for a single data center and then they will go and connect those Microfabrics together with the next layer of switching. Before the 9200 was available, one customer had multiple Microfabrics connected together through a [Juniper] MX [router]. They decided to collapse the core and data center edge together into one environment. Now we expect the 9200 to sit at that layer and offer that interconnect between multiple Microfabric pods. It wouldn't be an Interconnect per se but it would be a switching layer between the two pods. ■



Read the rest of this interview
online. tinyurl.com/ch3j89b

TOOLS

Pneuron, an outstanding enterprise data infrastructure solution

How would you like to build a global enterprise-scale data access infrastructure? A daunting prospect, yes? Imagine creating a system that could make any subset of any significant data resource in your organization available where it's needed without incurring insane implementation and maintenance costs... sounds too good to be true?

Well, that's what Pneuron promises with its eponymous Pneuron Solution (the "P," which stands for "process" and "predictive," is silent).

It's generally reckoned that about 80% of IT expenditure goes to maintenance (a.k.a. "keeping the lights on"), which means that trying to add major business initiatives such as enterprise analytics or meeting new regulatory reporting requirements can be a huge burden on budgets. Pneuron claims its solution offers a 50% improvement in Time to Value and TCO.

As an example of the kind of problems Pneuron addresses, consider the challenge of building enterprise business analytics to provide a "big picture" view of an operation that's spread across a couple of dozen offices in half a dozen countries. This provides an entire obstacle course of headaches. For example, French law is très particular about certain personal data leaving the country, while data connections to, say, Kenya, might not allow for realtime database access.

To solve this problem enterprises have relied on techniques such as duplicating databases, leaving the source copy where it is and replicating the source to wherever the analytics are to be done. This might work for the inventory database in Kenya as long as you don't need the latest data, but it's not going to do for the human resources database in the French office where the data can't

leave the country.

And one of the biggest gotchas with the ways these kinds of problems are usually solved is the maintenance nightmare that results from the "kluge" factor involved.

Pneuron is a very serious, enterprise-scale solution for distributed managed data access and manipulation that **is quite unlike anything else I've seen.**

The Pneuron Solution provides a distributed data access, extraction and transfer solution based on Pneurons, "mini applications" that are deployed to one or more lightweight "Cortex" virtual servers.

The Cortex servers are Java VMs that create a cluster-able, load-balanced, elastic cloud model with fault tolerance and failover. The servers run on Windows (even XP!), various flavors of Linux, AIX and Solaris, as well as on VMware vSphere, KVM, Oracle VirtualBox and Amazon EC2.



Mark Gibbs' Gearhead

and support MySQL, Postgres, Oracle 10g and 11g, DB2, HSQL and Apache Derby databases.

Many Pneurons are available, including Data Query which extracts data from SQL databases; Service to execute a Web service call; File to access any of a number of file types; Predictive which supports importing and creating PMML models; RulesML for rules-based processing; Matching which compares retrieved data to templates or other sources; and Analytic which provides graphical and tabular displays.

The Pneurons do their work gathering and massaging data and pass that to the Cortex server to be routed to another Pneuron running on the same or a different Cortex server. Data transfers between Pneurons is in an encrypted "universal" self-describing format based on XML.

To create a solution using Pneuron you'd deploy Cortex servers according to local control needs. For example, if French HR data was being used, a Cortex server would be needed in the French office configured so that the non-sharable HR data would not be available. Once the servers are installed and configured then, using the Pneuron Design Studio, you'd configure which Pneurons would run where and do what tasks.

Pneuron is a very serious, enterprise-scale solution for distributed managed data access and manipulation that is quite unlike anything else I've seen. The company is well-funded (it just got \$6 million series B financing from Safeguard Scientific) and it has a slew of case studies that articulate the kinds of problems it can address. This is definitely one of the most intriguing enterprise products I've come across in a long time. ■

Gibbs is not distributed, he's in Ventura, Calif. Connect to gearhead@gibbs.com. Follow him on Twitter and App.net (@quistuipater) and on Facebook (quistuipater).

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GADGETS

Seagate's Central hits a home run in the NAS game



Keith Shaw's
Cool Tools



Seagate Central

by Seagate; 2TB model costs about \$160, 3TB costs about \$220, 4TB costs about \$250 (Amazon pricing)

► **What it is:** The latest network-attached storage (NAS) appliance from Seagate is designed to easily connect to your home network to provide a centralized storage location for your data — documents, photos, music, videos, etc. In addition, the drive can be accessed within your home network by a multitude of devices — whether it's connected PCs, Macs, smartphones, tablets or even remotely across the Internet.

The small box connects to a home router via Ethernet, with an easy setup via PC or Mac that lets you drag-and-drop your content into folders on the drive. For smartphones and tablets, you download the free Seagate Media App, which can then easily find your media (videos, music or photos) and play or display them on your device. Remote access is handled through your computer's browser via a third-party app (Tappin).

► **Why it's cool:** I've tried many NAS devices over the years, including those from Seagate. But this is the first one that I truly love to use and access. Seagate understands that it's not just about storage capacity or even centralized content (although that's a worthy goal for everyone to have). Rather, it's the idea that you should be able to access and enjoy the videos, music and photos you've created or collected over the years. There's nothing more frustrating than having a client device that can't easily play a movie or music stored on a NAS device. For many, that means copying files from one hard drive to another, or loading that content locally onto the client device. Seagate's Media app is fantastic — every file I loaded

onto the Central device could play on my devices, including the iPad, iPhone, Amazon Kindle Fire and Xbox 360.

Like other recent drives from Seagate, the Central can automatically back up photos and videos from your Facebook account, giving you easy, don't-even-think-about-it backup. With more people taking photos and videos with their smartphones, they're often skipping the middle step of transferring them to a computer, eliminating a potential backup avenue. This automatic backup feature guarantees that when you upload a photo or video to Facebook, that it will be saved to the Central drive as well.

The Seagate Media app also lets you upload data from your mobile device to the Central drive — if you have a bunch of photos that you didn't upload to Facebook, you can transfer them to the Central drive via the app. I only tested this while connected to my home network — I'm not sure if this works remotely.

The hardest part of using the Central will be to transfer all of your content stored on all your other drives and devices to the unit (I'd recommend connecting a PC/Mac directly to the router if you have a lot of data to transfer).

► **Some caveats:** The remote access feature

doesn't let you stream videos stored on the Central — you can download them to your local PC, but not play them. Seagate says it may offer streaming video functionality at a later date, but it's not available at the moment. One other quibble: I had connected the Central to a wireless router, and couldn't find the drive from my powerline-attached Xbox 360, which was connected to my regular home router (in my house, I disable the wireless on the FiOS-provided router to use a newer wireless router). The Xbox 360 couldn't access media from the Central unless I connected it via the Wi-Fi network. But that could be an Xbox issue, as well.

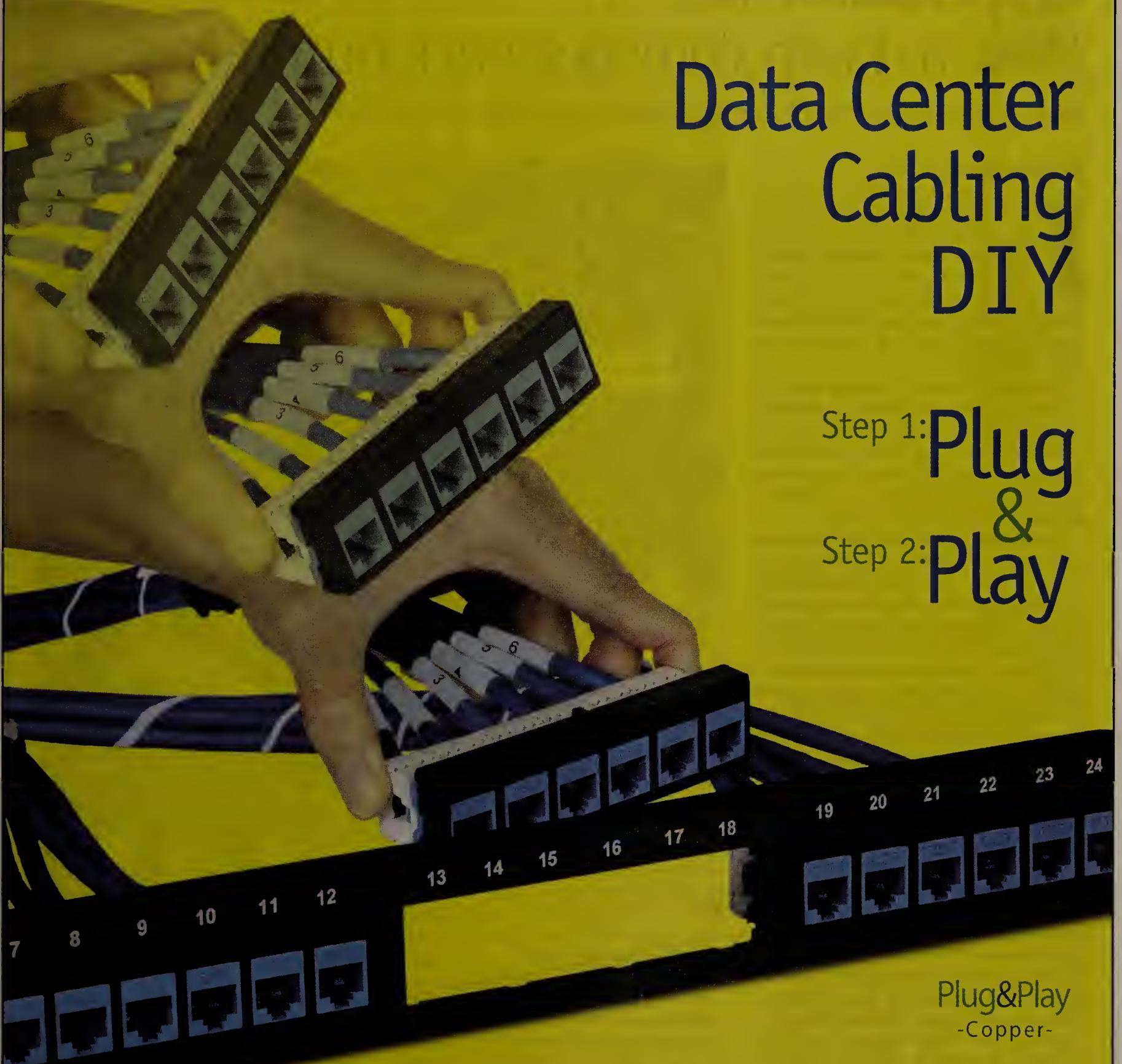
► **Bottom line:** Seagate hits a home run with Central. There are no more excuses for not having a NAS box on your home network to provide centralized storage for your media content, as well as an easy-to-use backup system for your data and social network content.

► **Grade ★★★★ (out of five).**

Shaw can be reached at kshaw@nww.com. Follow him on Twitter: @shawkeith.



Seagate's latest model lets you access videos, music and photos.



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How to keep your network humming

Argent wins test of six midrange network management suites

BY BARRY NANCE

If your network has between 1,000 and 10,000 devices and computers, you have a midsize network. Your servers, connections and other resources suffer the same problems as larger networks, but your budget for keeping the network healthy is less than what large enterprises enjoy.

The ideal network management product accurately discovers devices, computers and apps, uses compute resources frugally, graphically depicts network components, monitors the health of every device or computer, gleans its data from a variety of sources and works with both IPv4 and IPv6.

It also supports all devices, cloud resources, wireless connections and virtual servers, can accept and use complex descriptions of thresholds, can send alerts via email, pager or text to different individuals or groups depending on the problem, can escalate notifications when problems persist, can perform root cause analysis and can correct some problems automatically. Plus, it integrates with help desk software and with other monitoring tools, produces useful, easy-to-understand and timely reports, and is highly scalable, reliable and easy to use.

In other words, it has to be able to do it all. We tested six such products in this review:

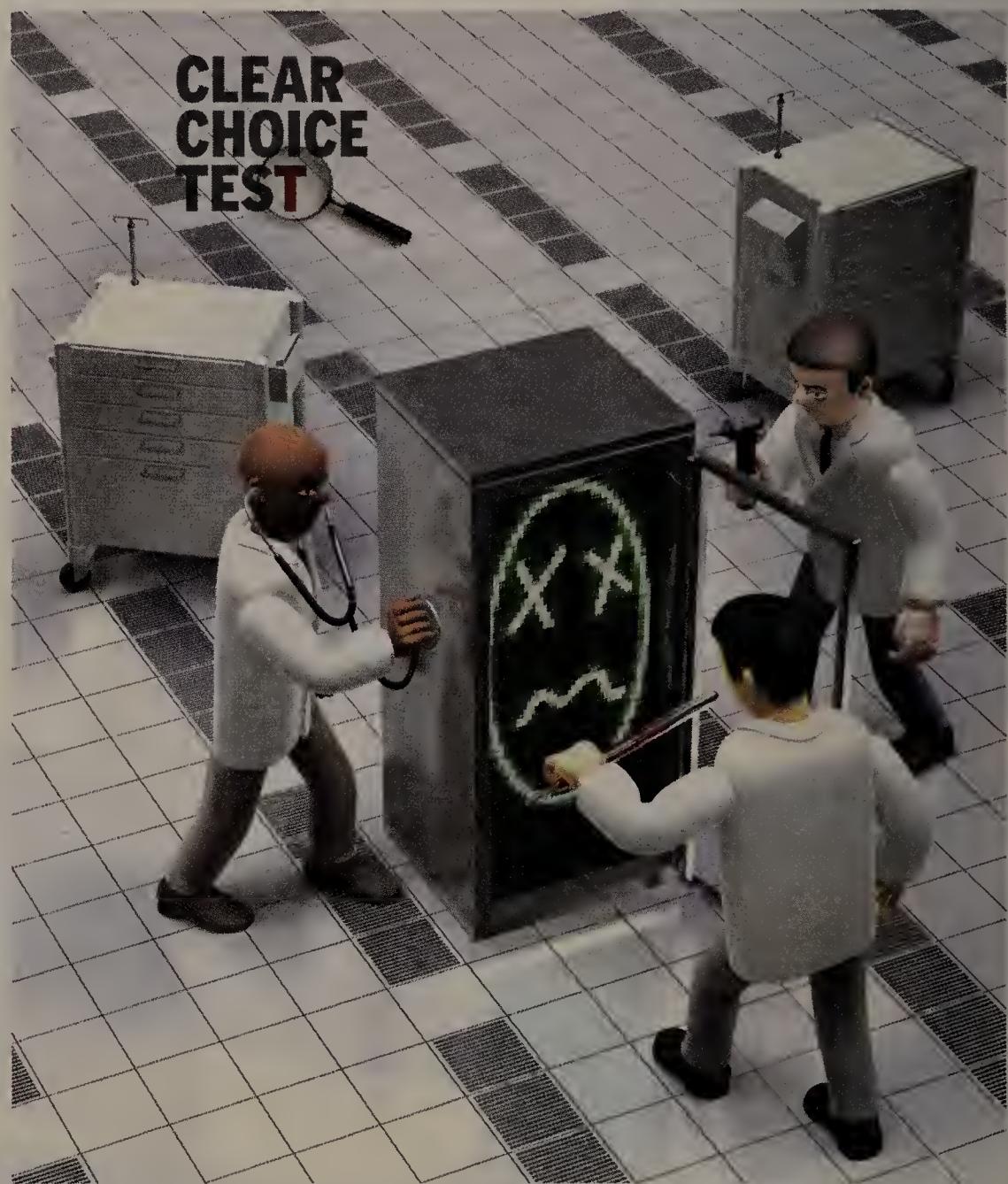
Paessler PRTG v12.4, Heroix Longitude v8.1, HP Intelligent Management Center (IMC) Standard and Enterprise v5.2, Ipswitch WhatsUp Gold (WUG) v16, SolarWinds Orion Network Performance Monitor (NPM) v10.4 and Server & Application Monitor (SAM) v5.2 and Argent Software Advanced Technology (AT) v3.1, including Argent Commander 2.0 and Argent Reports 2.0.

Argent Advanced Technology earns itself the *Network World* Clear Choice award, edging Heroix Longitude, which came in second. Advanced Technology gave us sophisticated thresholds, a responsive user interface, accurate device discovery, time-saving root cause analysis, helpful corrective actions and meaningful reports.

Here are the individual reviews:

Argent Software Advanced Technology (AT)

Argent's Advanced Technology (AT) is a highly scalable, feature-rich and mature monitoring tool. Its Web 2.0-based user interface is intuitive, responsive and productive. AT's discovery process is accurate, its thresholds can express sophisticated networking



situations and it can flexibly send alert notifications to multiple administrators.

AT doesn't require agents, but it can minimize WAN link traffic by using them to collect and forward network status information. AT can automatically correct a wide range of network problems.

The clear, meaningful reports are perfect for tracking network failures, spotting imminent performance issues, showing SLA compliance and analyzing capacity planning trends. AT is neither the least nor the most expensive monitoring product. In short — Argent's Advanced Technology is a highly capable monitoring tool appropriate for networks of varying sizes.

AT's browser-based interface uses easy-to-understand, customizable dashboards to make its displays meaningful to an administrator at first glance. It creatively and smartly uses JavaScript to provide multi-level

drop-down menus and tabs to organize tasks in a way that aligns perfectly with administrator workflows.

Furthermore, the interface implements many features found in traditional desktop applications, such as context menus, modal dialogs, client-side validation and virtual controls. However, its browser-based interface lacks some of AT's native Windows user interface, which Argent still includes with AT.

Argent Commander, an "umbrella" interface, is a customizable Web 2.0-based central console for managing moderately large to large networks. It shows real-time monitoring results, including server status, network health, critical key performance indicators and top X events, and it integrates with Active Directory for the sake of security. Argent Commander's Web interface supports multiple languages.

Argent AT's wealth of thoughtfully designed features served us well in testing. The discovery process used ICMP pings, SNMP queries, DNS lookups and other actions to accurately recognize, identify and harvest details from network devices. It quickly gave us a network map that enumerated our routers, switches, servers and clients. When we pointed AT at a particular router, it intelligently discerned the network links, nodes, devices and computers associated with that router.

AT organizes network status conditions into five categories: Acceptable Operation, Approaching Limit, At Limit, Exceeding Limit and Major Overload. The real-time monitoring and root cause analysis helped us quickly pinpoint network problems. And AT's sophisticated set of thresholds greatly facilitated our efforts to keep the network up and running. These thresholds let us specify abnormal traffic levels and unhealthy server behaviors by time of day and day of week.

Argent includes more than 2,000 pre-defined application- and device-specific rules in AT.

Without requiring agents deployed across the network, AT used SNMP, WMI and other protocols to find and diagnose our network's failures. In each case, AT zeroed in on the source of the problem (the root cause), which let us ignore the cascade of downstream linkage faults.

AT can take corrective actions, either by running a program, running a script, restarting a failed Windows background service or rebooting a server. It can even issue SQL statements (to trigger, for example, the running of an Oracle process).

AT escalated its notifications when necessary and its broad range of corrective actions let us set up automatic fixes for many network failures.

Platform-neutral AT monitors a range of server operating systems. It has an abundance of application-specific modules for monitoring, for example, Oracle, Microsoft SQL Server, Exchange, BlackBerry Servers, Lotus Notes, Brocade, Check Point, Cisco, Compaq, Dell, HP, Intermec, Legato, Liebert, NetWare, Nokia, Nortel, Lotus Notes, Omnitronix, Sonic, WebSphere and WebLogic.

Argent for Exchange fully monitors Microsoft Exchange 2007 and Exchange 2010, and it has legacy support for Exchange 5.5, 2000 and 2003. Argent for Exchange also supports the complete set of Exchange's client-access protocols, including round-trip testing, MAPI interface, Outlook Anywhere, Outlook Web Access and Outlook Web Services.

AT's True Round Trip Time measurement tested our Exchange server by actually sending and receiving real emails and noting elapsed times, giving us early warnings of potential Exchange faults and performance problems. On all servers, AT notified us of server CPU utilization, disk space, low memory and network adapter issues. On our Windows servers, it monitored Windows services, Active Directory and system registry health.

Argent for VMware pervasively monitors both v3.5 and v4.0 hosts, including Datacenter, Cluster, Resource Pool, ESX and ESXi. It tracked events and logs in our virtual machines, and it also managed patch updates. Argent for VMware monitored the guest operating systems with the same thoroughness AT did with physical servers. Argent offers a Citrix XenServer virtual machine monitoring tool, as well. Argent doesn't support Microsoft Hyper-V or Red Hat KVM.

AT's reports are especially clear and meaningful. Out of the box, they're useful for charting events, expressing service-level agreement compliance and detailing network devices, computers and applications. They're an excellent source of data for capacity planning and historical trending analysis.

Creating new custom reports with AT is easy, with a run-time version of the Crystal Reports design tool. It took us only a few drag-and-drop operations and a few mouse clicks to get the information we wanted for the time period(s) we chose. We gave the report a name, saved it in an Argent Reports Folder and scheduled it to thereafter run weekly.

We designed both Argent Graph and Argent Table custom reports. For a Graph-based report, we merely needed to specify the AT network metrics to include, the network nodes to report on and a few report options. We could choose to graph various metrics, including SNMP metrics, Linux/Unix metrics and VMware metrics.

The table-oriented reports we created showed alerts, change logs, events, file audit results, Exchange mailbox activity, Exchange traffic activity, node details and summaries, performance data, Top X traffic generators and SLA downtime data.

AT runs on Windows Server 2003 or Windows Server 2008 on a machine with at least 2 CPU cores, 2GB RAM and a 1.2GHz CPU. Its device/event repository can be either Microsoft SQL Server or Oracle.

Paessler PRTG

PRTG Network Monitor is easy to use, simple to install and an excellent monitor of diverse

devices. Unfortunately, its \$10,800 price tag for an unlimited number of devices is expensive. Paessler also offers PRTG on a per-sensor basis (about \$400 for 100 sensors), but the fine granularity of what Paessler terms "sensors" means you'll need lots of them.

"Sensors" are PRTG's basic monitoring elements. One sensor monitors one particular metric on your network (one single aspect of a device). This metric might be a switch port's traffic, a server's CPU load or a server's free disk space. We found we initially needed about 10 to 20 sensors per server and one sensor per switch port. Our sensor count quickly mounted as we added sensors for ping time, the traffic of a network interface and the status of a toner cartridge. Budget-conscious customers will be relieved to know that disabling an active sensor returns it to the license pool.

PRTG offers more than 130 sensor types, with each instance counting as one sensor toward the licensed total. The available sensor types range from simple ping, SNMP and WMI monitors to specific server-type sensors for database, mail, file, Web and FTP servers.

We used Paessler's Amazon CloudWatch sensors to monitor Amazon AWS cloud applications. Paessler's new Google Analytics sensor showed us all activity for a website. And we found PRTG's monitoring of VMware, Microsoft Hyper-V and Citrix XenServer virtual environments highly useful.

PRTG installs on nearly any Windows version (XP and later) in less than two minutes.

PRTG's fault tolerant clustering feature coordinates the running of a master PRTG node and up to four failover (slave) PRTG nodes. The master and slaves continuously monitor the network, so failover was nearly instantaneous in our tests.

PRTG requires the installation of agents (Paessler terms them probes) on non-local networks. Remote probes monitor WAN connections, collect/forward remote network statistics and can be used to distribute the network monitoring workload.

PRTG has a responsive, intuitive Ajax-based Web interface. PRTG color-codes sensors to indicate at a glance which ones are up, down, paused or in a warning state. Hovering the mouse over a sensor displays a graph of live data. Clicking on a sensor drills down for detailed, pertinent and useful information about that sensor.

PRTG's initial network discovery was quick and accurate. Once we supplied credentials so it could access our servers and routers, PRTG populated its device database

and began monitoring all the devices it found. During initial discovery, PRTG automatically added a sensor instance for each metric for each device and computer.

We were surprised when PRTG's generated sensor count exceeded our estimates by a wide margin. If you need to restrict your sensor count to a licensed limit, you'll spend considerable time after initial discovery deleting unwanted sensor instances.

We liked PRTG's ability to hierarchically group devices and computers into meaningful sets. We found we could easily move nodes or subnets from one group to another as we arranged our network view by criteria such as geographic location or business function. Each server or router inherited login credential and discovery schedule settings from the parent group, or, if we wished, could have its own settings.

Configuring PRTG's sensor views to show important network status information was a breeze. We could choose to see, for example, the top 10 sensors for uptime (or downtime), CPU usage, fastest website responses and available disk space. After we applied our sensor view configurations to each of our hierarchical groups, PRTG's console gave us exactly the picture of our network we wished. However, PRTG doesn't have a speedometer-style dashboard, nor does it show real-time graphs and charts of network activity.

PRTG used sensor state and threshold triggers to send notifications and alerts via email notes, SNMP traps, SMS messages or Syslog entries. We set threshold values for sensors at various levels of the group hierarchy for device status or speed changes, threshold breaches and traffic volume levels. While these unsophisticated threshold settings will be adequate for many networks, we were disappointed that we couldn't tell PRTG to warn us if, for example, a particular WAN link experienced greater than 20% utilization

after midnight or on Saturdays and Sundays.

Helpfully, PRTG understood device dependencies and stopped flooding us with downstream device alerts when, for instance, a switch port failed. PRTG was also smart enough to automatically pause a server's other sensors (CPU, disk space, etc.) when the server stopped responding to pings.

We could also keep an eye on our network while in meetings or away from the office. PRTG's handy iPRTG app for iPhone/iPad/iPod Touch (no Android support) gave us mobile access to the monitoring tool's sensor data and reports. iPRTG displayed current sensor statistics, the status of key sensors, a navigable "sensor tree" of grouped devices and computers, sensor alarms, monitor log entries and network maps. We could remotely pause or resume a sensor's monitoring, acknowledge an alarm, see sensor details and edit sensor settings.

Now called just PRTG, this tool was at one time known as the Paessler Router Traffic Grapher.

Heroix Longitude

Java-based Longitude is easy to use, installs quickly, doesn't require agents, has a middle-of-the-bunch price tag and monitors a veritable plethora of devices, computers and applications. Longitude's simplicity belies its sophistication. We found we could use Longitude not only to keep our network healthy, but also to monitor SLA compliance and perform capacity planning analyses.

Longitude comprehensively tracks thousands of operational metrics that it uses in its alerts, reports and charts. It monitors a wide variety of operating systems and environments, software and network infrastructure. Longitude can even keep a watchful eye on user and business metrics.

Longitude's ability to monitor VMware is remarkable. We found that we could

automatically collect physical and virtual performance metrics for VMs, hosts, resource pools, clusters, datastores and whole data centers. Longitude consolidated VMware-generated alarms for unified alerting and reporting. We monitored the effect of virtual machines on the physical hardware, and we could optionally take corrective action on any of the performance metrics. Longitude doesn't support Microsoft Hyper-V or Citrix XenServer.

Longitude uses WMI to monitor Windows servers and desktops, SSH to monitor Unix machines and SNMP (via SNMPv1 community strings) to monitor network devices.

We could make Longitude's alert thresholds exactly as complex and realistic as we wished. For example, we used what Heroix terms correlated events to tell Longitude to alert us if a combination of different event conditions occurred. We specified two Event Conditions — file server CPU usage exceeds 50% and file server network connection traffic below 10% — and then tied these conditions to a "runaway file server process error" correlated event. In a test, we deliberately ran a CPU-intensive program on the file server computer while no one was accessing its files. Longitude dutifully warned us that the file server was behaving strangely.

Longitude can send particular correlated event email alerts to people other than network administrators. For instance, suppose the wireless access point in Conference Room 5 is not always reliable. In a test, we instructed Longitude to advise conference room users to avoid Conference Room 5 when other rooms' access points were working, but Conference Room 5's access point was not.

We were able to associate multiple actions with each alert (for example, sending both email and text messages upon the occurrence of an alert), and we could even suppress events, if we wished, based on date, time, computer ID

NETRESULTS

Product	Argent Software Advanced Technology v3.1	PRTG v12.4	Longitude v8.1	HP Intelligent Management Center (IMC) Standard and Enterprise v5.2
Company	ArgSoft Group	Paessler AG	Heroix	HP
Price	Starts at \$4,000 for 10 servers	Unlimited license, \$10,800	\$3,999 for 500 managed devices	Standard Edition for 100 managed devices starts at \$6,819
Pros	Sophisticated thresholds; excellent root cause analysis; many possible corrective actions	Accurate discovery; good root cause analysis	Sophisticated alert thresholds; good SLA tracker; easy-to-use user interface	Scales well; accurate discovery; excellent network topology map; good root cause analysis
Cons	Obscure documentation; browser interface incomplete	No corrective actions; expensive; no dashboards	Requires a fast computer	Limited corrective actions; obscure documentation

or the occurrence of a different event.

In addition to notifying you via an email note when it detects a problem, Longitude can also send SMS pages and generate SNMP traps. However, perhaps the best notification is the one that doesn't happen — Longitude can initiate corrective actions at your behest.

For example, when it detected a shortage of available file server disk space, we told Longitude to run a batch file program that deleted TMP files and did other housecleaning chores on the file server. In another test, we told Longitude to run a script that restarted a Windows service (background process) when it detected that the service had stopped running. Longitude fixed problems nearly instantaneously.

Longitude's consolidation and filtering of event logs is a terrific time saver. Plowing through multiple server event logs to locate specific important events is not a fun way to spend an afternoon, but knowing that critical errors have occurred is key to maximizing uptime and availability. Using pre-built, modifiable filters, Longitude collects event log entries from multiple machines and shows you just the ones you need to see.

In a perfectly platform-neutral manner, Longitude displays the filtered, sorted Unix and Windows server log entries together in the same list. The result truly unifies your system management efforts.

Impressively, Longitude automatically kept itself up-to-date (we could turn auto-update off, if we wished), and it also automatically performed maintenance functions on its network monitoring database.

We found Longitude to be the perfect SLA tracker for documenting the uptime and availability of our servers and applications. Besides monitoring the performance of individual servers, applications and devices, Longitude can take a higher-level view of the network via its SLA feature. Longitude rather neatly

aggregated a group of our servers (some clustered, some not) to show, for instance, overall uptime for that group because they logically shared a particular workload.

In another test, when one of three related servers suffered downtime, but the two healthy servers continued to ensure application availability to the business community, Longitude on the one hand accurately and correctly noted the server's downtime on its dashboard and in its monitoring reports.

On the other hand, just as accurately and correctly, its SLA feature reported the overall availability of the shared three-server application as "good." When we tested with an SLA specifying that multiple resources (Web server, application server and database server) must all be available at the same time, Longitude unerringly reported SLA violations when one of the resources failed. Longitude's sophisticated SLA analysis understands the difference between individual server or application monitoring and measuring performance against the terms of an SLA.

We found Longitude's browser-based user interface intuitively easy to navigate and understand. Longitude displays at-a-glance real-time dashboards with pinpoint drill-down capabilities. Longitude's Event Monitor groups events by either device or application, and it can display additional information collected from Windows Event Logs, Syslogs, SNMP traps and SLAs via its intuitive dashboard. It also scales well — when we simulated the monitoring of a large network, we found we could delegate network segments or specific administrator roles to multiple local Longitude administrators.

When it detects administrator access from an iPad, iPhone or Android device, Longitude displays a mobile app user interface. This interface showed us actual performance data when we received an alert notification, and we used the interface's dashboards to view both

summary and detailed status information for servers, applications, devices and virtual machines.

The mobile app dashboard's color-coded pie charts gave us a quick, easy-to-understand picture of our network's health, and we used the dashboard to drill down to see specific data for computers, devices or applications we were curious about. On a mobile device, we could also view (and run) reports, see Event Monitor data or use Longitude's Real Time Performance Monitor.

Heroix Longitude runs on a Windows 2003 Server or Windows 2008 Server machine with at least a 2.4GHz P4 or Xeon processor and 2GB RAM. Be aware that Longitude is written in Java, an interpreted bytecode language, and needs somewhat more horsepower than a native Windows application.

HP Intelligent Management Center (IMC)

Intelligent Management Center (IMC) was by far the most technically demanding of the products we reviewed. The download file was about three times the size of the other products (1.2GB vs. 400MB), the base platform Administrator Guide manual is a hefty 991 pages and IMC requires considerable database administrator expertise.

Furthermore, at \$6,819 for just 100 devices, IMC is expensive.

HP IMC is a successor to the now defunct OpenView product and is intended for small to midsize networks. For large networks, HP sells HP Automated Network Management Suite, which we reviewed last March.

HP got IMC in its acquisition of 3Com. Retooled slightly, IMC is actually better than Automated Network Management Suite at monitoring and managing non-HP hardware.

IMC is a mixture of native code and Java with versions that run on either Windows Server or Linux. In addition to monitoring computers and devices via SNMP, IMC manages device configurations (backup, restore and compare), checks (and can remediate) device configurations against policies that you establish and presents a unified virtual LAN/ACL interface for managing devices from different vendors.

We noted that IMC supports some devices more fully than others. While it could poll all devices, it could perform configuration backups for many (but not all) and it could provide full component management (ACL, users, VLAN, etc.) for yet a smaller subset.

IMC's hierarchical model scales well, with each IMC server able to monitor and manage up to about 5,000 devices. Multiple IMC servers collaborate with each other; we only needed to use a single client browser window

WhatsUp Gold (WUG) v16

Ipswitch

Starts at \$1,595

Good interface with instantly informative dashboard layout; useful reports

Inaccurate discovery; limited wireless device support

Orion Network Performance Monitor (NPM) v10.4 and Server & Application Monitor (SAM) v5.2

SolarWinds

NPM starts at \$2,675; SAM starts at \$2,995

Sophisticated thresholds; excellent network map; useful reports

Sluggish (but well laid-out) user interface; device dependencies are tedious to set up

to administer all the IMC servers. Using its modular architecture, we added user access management, VPN management and traffic analysis. All modules integrated well and shared the same user interface.

IMC's browser-based interface shows a physical view of the network, a topology view and an alarm window. IMC also has windows for viewing reports as well as configuring and managing devices.

The primary window of IMC's browser-based interface displays "widgets," with each widget representing a network resource. IMC populates the primary window with widgets based on its highly accurate discovery of our network. We added, changed, moved and resized these widgets as we described the physical layout of the network to IMC. We quickly and easily added data centers, wiring closets and rack layouts. And we appreciated the ability to set up independent discovery schedules for different network domains.

IMC also automatically created a topology view of our network, based on the devices it discovered. The topology view shows the L2 and L3 links between devices and computers, and IMC gave us a real-time look at traffic conditions at the various links. IMC also displayed a performance view window, in which we could see the top N network traffic generators, note traffic bottlenecks and analyze trends.

We found root cause analysis and downstream event suppression, based on IMC's discovery of L2 and L3 network links, especially helpful when we were trying to understand a cascade of errors caused by the failure of an upstream device. IMC intelligently identified events associated with the root cause and discarded those events that were merely symptoms.

IMC's browser window of alarms used color codes to tell us about errors, warnings and informational events. IMC "recovers" alarms automatically if a device comes back online, or we could manually recover an alarm. Deleting an alarm removed it completely from IMC's database. From the alarm view, we quickly drilled down to view detailed alarm data and device details. IMC showed us recent monitoring information and device configuration features for the failing device.

IMC notifies administrators via email notes or SMS/text messages, and it can forward alarms to other network management products in the form of SNMP traps.

IMC comes with about 200 pre-configured, customizable thresholds for measuring the availability, reachability and performance of network devices. IMC's monitoring extends beyond devices to include IPsec VPNs, wireless LAN, QoS,

VSM and RMON. Compiling a Management Information Base (MIB) into IMC to create one or more new alarm thresholds is somewhat technically challenging. However, the new alarm worked well in our tests.

Reports are useful and easy to understand. IMC used current monitoring data to give us a clear picture of our network's overall health, and it summarized historical data for network trend analysis and capacity planning.

IMC understands virtual environments. It monitored VMware, Microsoft Hyper-V and Red Hat KVM (but not Citrix XenServer) environments, and it gave us a remote console through which we could manage these virtual machines. IMC displayed informative maps of our virtual networks and systems. It automatically tracked our virtual machines' network access ports, and we used IMC to migrate images of virtual machines from one physical server to another.

IMC comes in two versions, Enterprise and Standard. The Enterprise platform can manage more nodes, it includes HP's Network Traffic Analyzer module and it's the tool of choice if you need to administer multiple IMC servers from a single location.

On Windows or Linux, HP suggests using a 2GHz Pentium III or equivalent processor for fewer than 500 nodes, along with 2GB RAM and 50GB disk storage. For more than 500 nodes, HP suggests using a multiple-CPU machine. IMC also requires Microsoft SQL Server (on Windows) and either Oracle or MySQL on Linux. IMC assumes it's the only application that accesses the database. Getting IMC to share an existing SQL Server database with other applications will likely require the help of an HP support person.

Ipswitch WhatsUp Gold (WUG)

WhatsUp Gold (WUG) looks simple, inexpensive and capable at first glance. However, a little experience with WUG reveals that, for all but small networks, it's a complex network monitor with some stringent system requirements, some shortcomings with respect to supported network devices and a price that increases dramatically as you add both nodes and features.

Ipswitch offers Standard, Premium and Distributed editions of WUG. Optional plug-in modules include WhatsConfigured, Flow Monitor, WhatsVirtual, Flow Publisher, VoIP Monitor, Failover Manager and Scalability Pollers. All editions use Microsoft SQL Server as a network event and device repository, and they use Microsoft IIS as the underlying Web server for displaying WUG's user interface.

WUG's Standard Edition is an excellent, basic monitoring tool for not-too-large, uncomplicated networks. We found the Web browser-based main console to be intuitive. It shows network health in an at-a-glance set of dashboards, network maps and graphs.

The dashboard layout is instantly informative and meaningful. WUG organizes views of the network into separate windows for Wireless, Log Management, Flow Monitor, Devices, Inventory, Configuration and Reports, and each view is eminently customizable. We appreciated the appropriate-to-the-task network health data that each view showed us, and we liked the ability to filter results so we could focus on a specific device or a particular time period. Getting a quick, detailed device status display was simply a matter of hovering the mouse cursor over the device's entry in the Device Details view.

WUG's homepage window contains a universal dashboard, which reveals just that network information an administrator



The IMC dashboard gives a clear picture of network health.

The WLAN Manager gave us highly useful wireless LAN device configuration, topology, performance monitoring, RF heat mapping and WLAN service reports, all integrated within the IMC browser-based user interface.

IMC downloaded its software patches from HP automatically, and it also received new firmware version releases for HP devices that we could apply when we wished.

Using the IMC mobile app for iPhone and Android, we easily tracked network performance and health remotely, via the Internet. These apps lacked some of the functions of the primary Web browser interface, such as configuration management. However, IMC's mobile app for iPhone or Android displayed the dashboards and alarms that an administrator who's away from the office would need in order to be aware of network problems. We noted that the IMC mobile app hadn't been updated in over a year, and at times the app seemed more like a "proof of concept" than a real adjunct to IMC.

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generally needs to see most frequently. This data included number of devices, current health status, active monitoring, hardware performance, recent alerts and wireless activity. We easily customized WUG's primary display window by right-clicking to remove unwanted sections and dragging and dropping into the primary window the network metrics we wanted to see most often. Other views are similarly customizable. For example, we customized the device status dashboard, which shows a detailed view of a single device's health, by dragging and dropping relevant metrics onto the device status view.

Dealing with problems was straightforward via the Alert Center, which showed alerts, alert acknowledgements and notifications across the network. WUG's performance monitors revealed CPU, disk space, network interface and memory utilizations, along with ping latencies. WUG's network discovery produced a L2/L3 topology map that included asset/inventory data. WUG has the ability to associate JScript or VBScript commands with a particular alert, which let us, for example, restart a failed Windows Service.

The Standard Edition discovered, mapped and inventoried assets across our network. The discovery process automatically assigns a device type to each node, but WUG misidentified about a quarter of our devices. No problem — fixing these errors was just a matter of clicking on a device in WUG's browser-based interface and correcting its device type.

We liked that we could schedule the discovery process or perform it on demand. WUG's L2/L3 device discovery used ARP, SNMP, SSH and ICMP to note interconnections and dependencies and, when the information was available via a query, inventory data such as serial number and OS version. WUG uses SNMP, WMI or the VMware API to obtain device data for the device status view.

The Log Management feature is rather helpful and a great time-saver. With it, we saw a consolidated view of Syslog entries and Windows events for all the devices. We could easily pinpoint problems, produce reports (filtered by device or type of log entry, if we wished) and set up alerts to notify us of particular entries or issues.

We liked WUG's alert notification flexibility. We set up email, pager, SMS, Web alarm, Windows popup, Klaxon sound and SNMP trap notifications, and we told WUG to restart Windows services and run external scripts when it detected easily corrected failures. We could also tell WUG to escalate alert notifications with emails to additional people when problems persisted.

We viewed several of the more than 200

useful, informative reports not only in the Web browser window but also in Excel, Acrobat PDF and CSV formats, and we could instruct WUG to email these reports.

WUG's Premium and Distributed editions add significant features, including real-time network monitoring and instant graphs, WMI application monitoring, PowerShell integration and HTTP/FTP synthetic transactions. These upscale editions also add monitoring of UPSs, printers, fans, power supplies and temperature, as well as wireless networks. However, we were disappointed that WUG's wireless network monitoring and mapping supported only Aruba Mobility and Cisco Aironet/Airespace controllers and access points. For these devices, we were able to map access points in WUG and could see real-time wireless network statistics.

The Premium and Distributed editions (but not the Standard Edition) contain the Dashboard Manager for configuring custom views of network data, and they also have support for instant access to real-time data via WUG's Instant Info.

The Distributed Edition uniquely adds remote monitoring to what the Premium Edition offers: Remote IP Services, Remote SNMP Monitoring, Remote WMI Monitoring, Remote Device Dependencies, WAN Device, Port and Link Monitoring, Remote Alert summaries and Remote Reporting summaries.

The optional plug-in modules should, we think, be part of the basic product. For example, the WhatsConfigured plug-in collects and records existing configuration settings for each monitored device, and an administrator can use it to distribute configuration changes as well as issue alerts when changes are detected.

The Flow Monitor plug-in shows, in a single window, data gathered via Cisco NetFlow, sFlow, J-Flow, and Border Gateway Protocol (BGP) from switches, routers and other network devices. The result is an informative real-time view of LAN/WAN network traffic patterns and bandwidth utilizations. Flow Monitor also identifies the users, applications and protocols that are consuming the greatest bandwidth.

The WhatsVirtual plug-in component groups all VMware machines detected on the network for virtual machine-specific monitoring. WhatsVirtual gave us a separate, VM-appropriate view through which we mapped and monitored virtual machines. Unfortunately, WUG doesn't support Microsoft Hyper-V, Citrix XenServer or Red Hat KVM.

Support for mobile devices rests in the WUG Web server, not in a mobile app. When the Web server detects mobile device access via Mobile Safari, Microsoft Internet Explorer

Mobile or Opera Mini, the server emits small-screen Web pages with content designed for a mobile interface. It was somewhat limited — we could choose just between device status information and reports. Helpfully, the mobile interface gave us a list of recent reports, and it let us identify our favorite reports.

To monitor 100 devices, WhatsUp Gold needs at least 2GB of RAM on a 2.4GHz dual-core machine running Windows Server 2008 and Microsoft SQL Server 2008 Express Edition. For 2,500 devices, WUG needs at least 8GB on a 2.4GHz quad-core machine running Windows Server 2008 and a separate, dedicated Microsoft SQL Server 2005 machine. For 20,000 devices, WUG requires at least 8GB on a 2.4GHz eight-core machine plus a separate, dedicated Microsoft SQL Server 2005 eight-core fast machine with at least 32GB RAM.

SolarWinds Orion Network Performance Monitor (NPM) and Server & Application Monitor (SAM)

Network Performance Monitor (NPM) tracks network and server activity, while Server & Application Monitor (SAM) monitors the software running in the servers. NPM and SAM complement each other.

The combination of the two products alerted us to network problems, let us set up sophisticated thresholds, was agentless, gave us useful reports, displayed a helpful network map and let us delegate administrative subtasks. However, the NPM and SAM interfaces are not as responsive as we would've liked, the two products are pricey for larger installations and they don't have the ability to automatically correct problems by running scripts or restarting failed Windows services.

NPM uses the ICMP, SNMP, WMI and Syslog protocols to gather connectivity and performance data from routers, switches, access points and servers. NPM's root cause analysis used this data to correctly and unerringly identify the true network problems we confronted it with.

However, NPM's root cause analysis relies heavily on what NPM terms group dependencies, which we found to be tedious to set up. We had to designate nodes as Parents and Children for NPM to know that, when a Parent failed, NPM should trigger a single alert for the Parent and report as "Unreachable" the (say) 50 Children connected to the Parent. Identifying Parents was easy, but designating the Children was a one-by-one, device-by-device process. NPM only let us tie a single Child or a single group to a Parent.

We would've liked the ability to associate multiple Children with a single Parent. Putting the dependent Children into groups and

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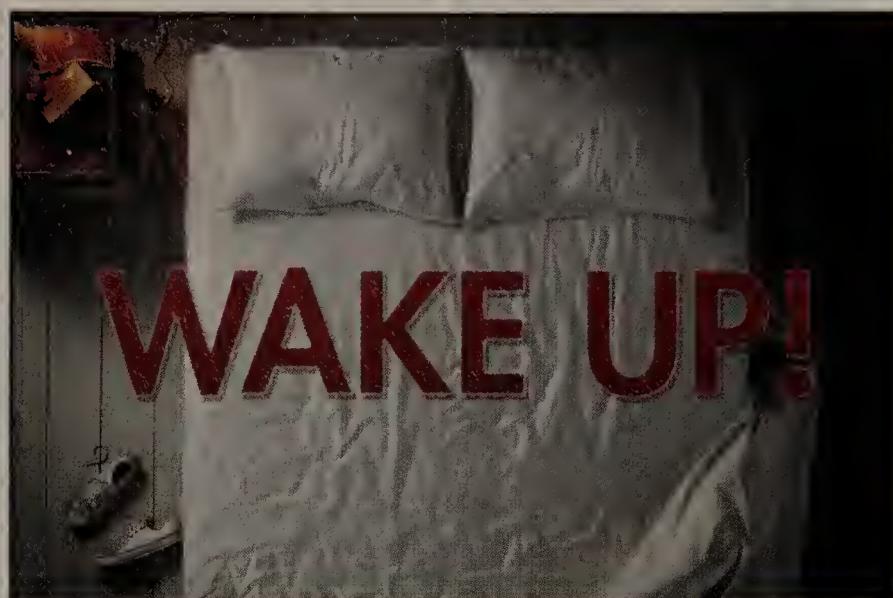


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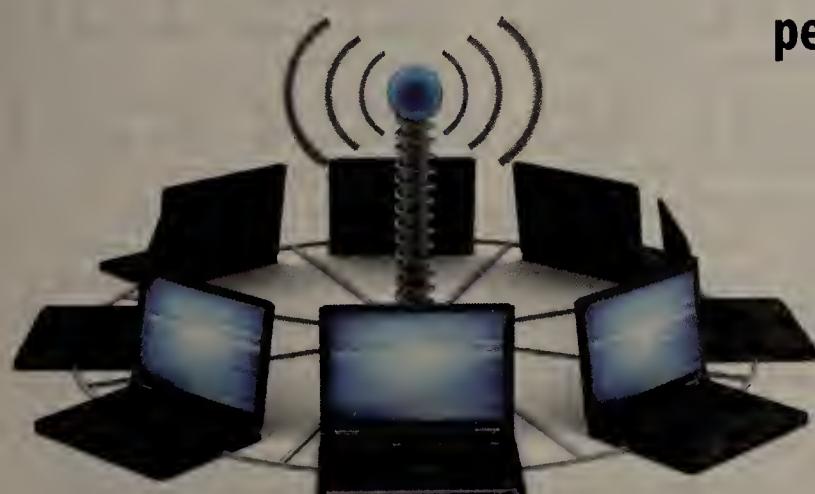
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then associating the Parents with the Child groups was an alternate approach, but it was similarly time-consuming.

We easily set complex and sophisticated NPM thresholds for alerts and notifications. We used the thresholds to describe dependencies for correlated events, sustained conditions and complex combinations of device states. Because NPM's complex thresholds accurately expressed real-world conditions we wanted to know about, we had a higher level of confidence that a real network problem had occurred when NPM triggered an alarm.

NPM's browser-based interface is intuitive to use, albeit a bit sluggish at times. Drilling down to node details displays basic device data. The next lower drill-down level reveals specific data, such as RAM usage, disk usage or bytes in/bytes out. Unfortunately, the browser interface is incomplete. Some tasks, such as configuring alerts, can only be done via NPM's native Windows interface.

The dashboard provided a useful summary of our network's performance and availability status at a glance. Customizing NPM to show current alerts, recent events, node lists, network maps and other network status information was a simple process, and we liked the ability to hover the mouse cursor over a node to see a pop-up window containing key metrics for that node.

NPM's customizability extends beyond the dashboard. For instance, we set up the node details window to display exactly the device metrics we were interested in. Even NPM's charts can be tailored to suit specific needs. Merely clicking on a chart starts the customization process. Modifying a variety of charts to use custom data ranges, titles and data was hassle-free.

The ConnectNow feature automates network mapping. After we dragged and dropped devices onto NPM's network map, we clicked the ConnectNow button and NPM automatically mapped the connections between the devices.

Optional NPM modules include NetFlow Traffic Analyzer, VoIP Monitor for VoIP traffic analysis, Virtualization Manager and Wireless Network Monitor.

Virtualization Manager supports VMware and Hyper-V, but not Citrix XenServer or Red Hat KVM. Its real-time dashboard clearly showed virtual machine performance data, including CPU, RAM, disk and storage I/O contention. Performance alarms, based on thresholds we set, integrated nicely with NPM's alerts and notifications. We liked managing our vCenters, clusters and individual virtual machines through a single interface. We also found Virtualization Manager a

useful aid for capacity planning.

We noted that NPM works especially well with virtual storage area network (VSAN), Fibre Channel and Cisco devices. For instance, it showed the traffic levels at each VSAN as well as the VSAN ports that were in use. Setting thresholds for VSAN alerts was similar to setting them for other nodes.

NPM's useful and meaningful reports are a snap to select and schedule. Exporting them as Acrobat PDF files is a breeze, and reports are highly customizable via the Report Writer module. However, while the browser-based Report Center offers many pre-built reports, it doesn't generate graphs. Report Center data appears in a table format.

The free NPM Mobile Monitor uses the Remote Desktop Protocol (RDP) and Virtual Network Computing (VNC) to access NPM's functions. When NPM triggered an alarm, the Mobile Monitor displayed the alert. We could then drill down to see the exact nature of the problem. As a nice touch, if you don't have the NPM Mobile Monitor loaded on your smartphone, NPM's Web server detects browser access from a mobile device and displays the user interface in a format suitable for a small screen.

A second, not-free Mobile Admin Monitor is also available. In addition to NPM, it administratively connects to more than 40 applications and operating systems, including Oracle, Microsoft Exchange, Microsoft SQL Server, Windows Server, Remedy Help Desk, Microsoft System Center Mobile Device Manager and other network entities.

SAM (Server & Application Monitor) is a useful tool for inspecting the running services and processes on database, email and other servers. SAM reveals dependent services, and it can help you understand how the failure of one network service affects other services and processes. SAM shows more detailed server activity than does NPM. For example, SAM's performance metrics gave us real-time data on database transaction rates and email traffic loads.

SAM's network map shows, at a glance, the performance of a network's servers. When SAM sent us notifications of problems, based on thresholds we'd set, we drilled down from the network map to discover the nature of the problem. We used SAM's User Experience Monitors, which assess users' Quality of Experience (QoE), to help us determine that a particular server process was using too much CPU. We quickly and confidently realized that high CPU usage rather than high network traffic levels was causing a problem.

SAM monitors a plethora of software applications, tools and services.

NPM and SAM run on at least a 2GHz dual processor machine with 3 GB RAM and Windows 2003 Server or Windows 2008 Server. They also need SQL Server 2005 or 2008. ■

Nance runs Network Testing Labs and is the author of Network Programming in C, Introduction to Networking, 4th Edition and Client/Server LAN Programming. His email address is barryn@erols.com.

How We Did It

We evaluated each product's abilities in several different areas: discovery and enumeration of devices and computers, support for a variety of device manufacturers and device types, global directory integration, graphical depiction of the network, monitoring of network node status (availability), performance and health, alerts and notifications when network problems occur, automated corrective actions, maintenance of trouble tickets (or integration with a help desk tool), support for virtualized environments, cloud support and the production of useful, informative reports. We expected the reports would help us establish baselines, show available and unavailable devices, track each device's availability history, identify trends, give us the basis for accurate capacity planning and help us spot conditions that could result in future network problems.

Our test environment consisted of six routed Fast Ethernet subnet domains with T-1, T-3 and DSL links to the Internet. We ran each network monitoring product's server component(s) on a four-socket HP Proliant computer. Our server software was variously Windows 2008 Server, Windows 2003 Server and Red Hat Enterprise Linux Server. The 150 client computers on our network were a mix of Windows XP, Windows 2003, Windows 2008, Windows 7, Windows Vista, Red Hat Linux and Macintosh platforms. Relational databases were Oracle, Sybase Adaptive Server and Microsoft SQL Server. Our email servers were Sendmail and Microsoft Exchange. Web servers were Internet Information Server (IIS) and Apache.

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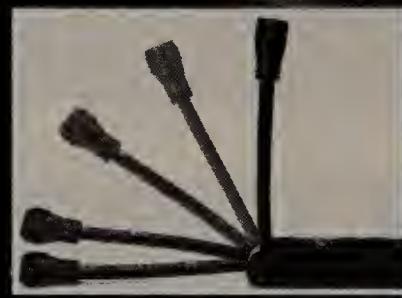
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BACKSPIN | BY MARK GIBBS

There's no such thing as product secrecy

ALL YOU chaps out there trying to sell enterprise solutions, I have some advice for you: You have to be completely open when you talk to your potential market. Indeed, I

will argue that you have to move toward radical transparency where everything is as open as possible ... including, hopefully, your code.

I was recently doing research and I went to the website of a sophisticated company that sells a bleeding-edge enterprise product, and I was offered a white paper, but had to provide my name, email address, company name and so on to get the document.

Now, asking for contact details is OK and can be a good lead generation tactic, but the reality is that the more leading-edge and enterprise-oriented your product is, the more sophisticated and smaller your audience will be and the less inclined they'll be to give up their data.

Sure, collecting names and details under other circumstances might give you a better idea of who your audience is, but in reality, some large percentage of serious potential enterprise customers will be ticked off by being asked to provide this data for one very good reason: They've come to see what your value might be but you're asking them for value (their data) before you've demonstrated you yourself have value.

So what do they do? They give you false information. The strategy of this particular vendor was to examine the responses in an attempt to weed out white paper requests from competitors on the theory that the less the competition knows about what the company is doing the better.

Great theory, but in practice, a total waste of time. If your competitors really want to see your collateral they'll get their grubby hands on it one way or another. These days, the Internet ensures that one single

public opening, one single "leak," will become a tsunami of exposure as fast as you can say "oops."

Just like privacy, secrecy is becoming an outdated concept.

But there's a bigger issue for purveyors of fine enterprise products: You are talking — or trying to talk — to busy people. An enterprise type comes to your site to try to understand what you're up to and what value he can get from you ... and that could be your one chance to connect.

Allow his interest to cool off for one second and you run the risk of him getting distracted and forgetting about you. Or, worse, getting frustrated. So, if you're going to ask him to share his personal data, he'll expect you to cough up the goods, tout suite. And they better be good.

But why force him to jump through hoops at all? A problem with the "tell me and then I'll tell you" strategy is that it puts a speed bump in the road to building a relationship. Sure, it's not an insurmountable bump, but anything that gets in the way of engaging the attention of a potential customer is a bad idea.

As a vendor you need to be as open to your market as possible. Particularly in the enterprise market, secrecy through obscurity is outdated, which is why so many companies are going open source ... the more people who know what you do the more understandable your value proposition becomes.

So, vendors: What's your rationale for trying to keep stuff secret? And buyers: How much does vendors being coquettish about what they do annoy you? ■

Gibbs is all ears in Ventura, Calif. Your data to backspin@gibbs.com and follow him on Twitter and App.net (@quistuipater).



NETBUZZ | BY PAUL MCNAMARA

Bottle sent to say sorry for trademark whine

ALL'S WELL that ends well, right? I mean especially when, as here, that ending comes complete with a bottle of wine and a box of

Twix candy bars. ... Maybe.

Here's what happened: On April 17, a small London-based Internet marketing company named Datadial received an email from a law firm representing the U.K. arm of Shopzilla, a large comparison-shopping site. The email alleged that Datadial had violated Shopzilla's trademark by — get this — simply linking to www.shopzilla.co.uk in a blog post. Remove that offending link, Shopzilla's attorneys stomped, or there will be legal hell to pay, followed by the financial kind.

Gobsmacked by the demand, Datadial did two things. First, it removed the link — hey, we're talking about a 15-person outfit being targeted by lawyers for a large company named after a giant monster that was created by nuclear explosions.

And then, being savvy Internet marketers, Datadial posted a lengthy screed to its blog spelling out in snarky detail the absurdity of the trademark assertion. That post, written by Datadial's Joe Shervell, cheekily reported that the original author was so distraught over the infringement accusation as to be torn between fleeing to a monastery and suing Shopzilla for inflicting emotional distress.

"However, he quickly rationalized the situation and sat down on his sofa with a glass of wine and a Twix," writes Shervell. "Since Shopzilla and its lawyers are solely responsible for causing an undue amount of stress, it only seems fair that they reimburse him for the wine and Twix. Twix: £0.80. Glass of wine: £2.40 (or about \$5 American.)"

Bet you were wondering when I'd get to the wine and Twix.

Once Shervell had finished upbraiding Shopzilla and its ham-handed legal muscle, readers of the Datadial blog were having a merry old time mocking them as well, until ... a Shopzilla executive went and spoiled all the fun by posting a comment in behalf of his employer.

"I'm terribly sorry you received the letter from our attorney's office," writes David Bixler, vice president of operations for Shopzilla Europe. "We appreciate that your site is not a spam site and is not misusing our trademark. We flag up thousands of backlinks that are potentially spam and unfortunately your site slipped through our filter. Please disregard the notice and let me know if the wine was red or white ... I'm sure I can find some Twix as well."

No idle boast. A short time later, while Shervell and I were swapping email about the matter, there was another knock on Datadial's door: "We just received a courier delivery. It was a bag labeled Shopzilla with giftwrapped presents inside. One bottle of wine, one box of Twixes."

So, all's well? Not entirely, according to Shervell, and it's not all Shopzilla's fault; he says Google's role needs to be noted.

"I think (the episode) says something nasty about the society Google has created," he tells me. "... Google's robots create a new environment where companies become tense about what should be casual online practices. I'm sure this wouldn't have happened two years ago (before Google's algorithm changes). It's another negative effect of Google's best intentions ... it creates a kind of state of panic."

Wine and candy can only help. ■



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